

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN
PUBLIC HEALTH ASSOCIATION

PRESENTING THIS MONTH

Dr. Tonney's outline of Control of Pasteurization

Discussion by Roberts and Parks of different Phases of the Meat Supply

Saville's story about risks of Check Valves and the Story of the Malaria Campaign in Cuba by Dr. Villuendas

A. Meeting, San Francisco, Cal.,

September 13-17, 1920

ings at the Auditorium, Civic Center

headquarters Hotel: The Palace

Published monthly on the 20th by the American Public
Health Association at

124 W. Polk Street, Chicago, Ill.

ADDRESS EDITORIAL MATTER TO

169 MASSACHUSETTS AVE.
BOSTON, MASS.

Subscription Price, \$4.00 per Year. Single Copies, 50 cents.
A. P. H. A. Membership, Including Subscription, \$5.00 per year.

Entered as second class matter January 20, 1920, at the postoffice at Chicago, Illinois, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized February 28, 1920.

SN 50780

CLARK AND LUBS INDICATORS

FOR THE COLORIMETRIC DETERMINATION OF H-ION CONCENTRATIONS

THE TEST
IN OUR STOCK FOR IMMEDIATE SHIPMENT
OF SERVICE



Clark and Lubs Indicator Set, covering a continuous range from pH 1.2 to pH 9.6

This set of eight Indicators has been prepared by Messrs. Hynson, Westcott & Dunning, Baltimore, Md., as a result of the studies of Wm. Mansfield Clark and Herbert A. Lubs. See *Journal of Bacteriology*, Vol. 2, Nos. 1, 2 and 3, (1917). They are recommended as offering a convenient method for the approximate determination of pH in the application of the principles of acidimetry and alkalimetry to the complex conditions often met.

Determinations of pH are made by comparing the resultant colors when the indicator is added in equal concentration to the test solution and to a standard solution whose pH is known.

These indicators are offered in dry powdered form and cover a continuous range from pH 1.2 to pH 9.6.

Chemical Name	Common Name	pH range	Per 0.1 gram	Per 1 gram
Thymolsulphonephthalein—acid range	(Thymol Blue)	1.2—2.8	.25	2.00
Tetrabromphenolsulphonephthalein	(Brom-Phenol Blue)	2.8—4.6	.25	2.00
Orthocarboxybenzeneazodimethylaniline	(Methyl Red)	4.4—6.0	.25	.50
Dibromocresolsulphonephthalein	(Brom-Cresol Purple)	5.2—6.8	.25	2.00
Dibromthymolsulphonephthalein	(Brom-Thymol Blue)	6.0—7.6	.25	2.00
Phenolsulphonephthalein	(Phenol Red)	6.8—8.4	.25	2.00
o-Cresolsulphonephthalein	(Cresol Red)	7.2—8.8	.25	2.00
Thymolsulphonephthalein—alkaline range	(Thymol Blue)	8.0—9.6	.25	2.00

Prices subject to change without notice

ARTHUR H. THOMAS COMPANY

WHOLESALE, RETAIL AND EXPORT MERCHANTS

LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE

PHILADELPHIA, U. S. A.

AMERICAN PUBLIC HEALTH ASSOCIATION

BOARD OF DIRECTORS, 1919-1920

OFFICERS

President, W. S. Rankin, M. D., Raleigh, N. C.
 Vice-Presidents, A. J. Douglas, M. D., Winnipeg, Man.
 S. L. Jepson, M. D., Charleston, W. Va.
 W. H. Robin, M. D., New Orleans, La.
 Treasurer, Roger I. Lee, M. D., Cambridge, Mass.
 Secretary, A. W. Hedrich, C. P. H., Boston, Mass.

EXECUTIVE COMMITTEE

W. S. Rankin, M. D., Raleigh, N. C. (1920)
 Roger I. Lee, M. D., Cambridge, Mass. (1920)
 A. W. Hedrich, C. P. H., Boston, Mass. (1920)
 C. J. Hastings, M. D., Toronto, Ont. (1920)
 Peter H. Bryce, M. D., Ottawa, Ont. (1920)
 W. A. Evans, M. D., Chicago, Ill. (1921)
 A. J. McLaughlin, M. D., Washington, D.C. (1921)
 M. P. Ravenel, M. D., Columbia, Mo. (1922)
 Lee K. Frankel, Ph. D., New York City (1922)

DIRECTORS ELECTED BY THE ASSOCIATION

Directors whose terms expire in 1920

John B. Anderson, M. D., Seattle, Wash.	L. A. Galaretta, M. D., Havana, Cuba	P. M. Hall, M. D., Minneapolis, Minn.
M. S. Fraser, M. D., Winnipeg, Man.	C. J. McGurran, M. D., Devils Lake, N. D.	W. H. Kellogg, M. D., San Francisco, Cal.
E. R. Kelley, M. D., Boston, Mass.	S. J. Crumbine, M. D., Topeka, Kan.	B. L. Arms, M. D., Jacksonville, Fla.
	M. M. Seymour, M. D., Regina, Sask.	

Directors whose terms expire in 1921

F. L. Hoffman, LL. D., Newark, N. J.	J. T. Black, M. D., New London, Conn.	A. J. McLaughlin, M. D., Washington, D. C.
Oscar Dowling, M. D., New Orleans, La.		G. H. Sumner, M. D., Des Moines, Iowa

Directors whose terms expire in 1922

M. P. Ravenel, M. D., Columbia, Mo.	John A. Kappelman, M. D., Canton, Ohio	Haven Emerson, M. D., New York City
Henry F. Vaughan, D. P. H., Detroit, Mich.		J. D. Robertson, M. D., Chicago, Ill.

PAST PRESIDENTS (Directors Ex-Officio)

Stephen Smith, M. D., New York City	John N. Hurty, M. D., Indianapolis, Ind.
Frederick Montizambert, M. D., Ottawa, Ont.	Rudolph Hering, Sc. D., New York City.
S. H. Durgin, M. D., Millbrook, Mass.	William C. Woodward, M. D., Boston, Mass.
Peter H. Bryce, M. D., Ottawa, Ont.	Wm. T. Sedgwick, Sc. D., Cambridge, Mass.
Richard H. Lewis, M. D., Raleigh, N. C.	John F. Anderson, M. D., New Brunswick, N. J.
Gardner T. Swarts, M. D., Providence, R. I.	W. A. Evans, M. D., Chicago, Ill.
Charles O. Probst, M. D., Columbus, Ohio	Chas. J. Hastings, M. D., Toronto, Ont.
Robert M. Simpson, M. D., Winnipeg, Man.	Lee K. Frankel, Ph. D., New York City

REPRESENTATIVES OF SECTIONS TO BOARD OF DIRECTORS

Laboratory, G. W. McCoy, M. D., Washington, D. C.	Sociological, Louis I. Harris, M. D., New York City
Vital Statistics, Louis I. Dublin, Ph. D., New York City	Sanitary Engineering, E. D. Rich, Lansing, Mich.
Public Health Administration, T. D. Tuttle, M. D., Topeka, Kan.	Industrial Hygiene, J. W. Schereschewsky, M. D., Washington, D. C.
	Food and Drugs, Prof. James O. Jordan, Boston, Mass.

The Board of Directors also includes representatives from affiliated state health organizations.

SECTION OFFICERS

Laboratory Section (Organized 1905)

Chairman, A. B. Wadsworth, M. D., Albany, N. Y.	V. Chairman, Roger G. Perkins, M.D.,* Cleveland, O.	Secretary, B. L. Arms, M. D., Jacksonville, Fla.
--	--	---

Vital Statistics Section (Organized 1908)

Chairman, W. H. Davis, M. D.,* Washington, D. C.	V. Chairman, W. A. Piecker, M. D., Richmond, Va.	Secretary, W. F. Petrie, Lansing, Mich.
---	---	--

Public Health Administration Section (Organized 1908)

Chairman, A. T. McCormack, M.D.,* Louisville, Ky.	V. Chairman, John A. Vogelson, Philadelphia, Pa.	Secretary, J. M. Furstman, M. D., Bloomington, Ill.
--	---	--

Sociological Section (Organized 1911)

Chairman, Ira S. Will, M. D., New York City	V. Chairman, W. H. Brown, M. D., Bridgeport, Conn.	Secretary, Philip S. Platt,* New Haven, Conn.
--	---	--

Sanitary Engineering Section (Organized 1911)

Chairman, Paul Hansen Springfield, Ill.	V. Chairman, Samuel A. Greeley,* Chicago, Ill.	Secretary, E. D. Rich, Lansing, Mich.
--	---	--

Industrial Hygiene Section (Organized 1914)

Chairman, F. D. Patterson, M. D., Harrisburg, Pa.	V. Chairman, A. J. Lanza, M. D., Washington, D. C.	Secretary, Prof. C.-E. A. Winslow* New Haven, Conn.
--	---	--

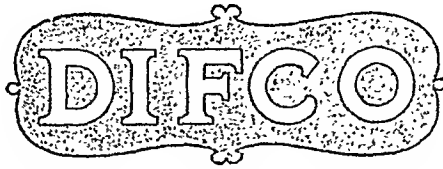
Food and Drugs Section (Organized 1917)

Chairman, Fred C. Blanck, Ph. D., Baltimore, Md.	V. Chairman, John P. Street,* Indianapolis, Ind.	Cor. Sec'y, H. W. Redfield, Ph. D., New York City
---	---	--

Secretary, Prof. James O. Jordan, Boston, Mass.

*Chairmen of Program Committees are indicated with asterisks.

TURN FORWARD TO PAGE VI FOR OTHER DIFCO PRODUCTS



BACTO-PEPTONE

DIFCO STANDARDIZED

**The Original Standardized Peptone
for Bacteriology**

Bacto-Peptone is the original peptone designed to meet particularly the nutritional requirements of bacteria in culture.

It is the first peptone designed to meet the requirement of uniformity in its chemical and biological properties.

It is made in large quantities by expert workmen under rigid scientific check and control. Raw materials are approved only after assay.

Accurate records of each lot are kept throughout the manufacturing process, and only those lots which pass definite chemical and bacteriological tests are allowed to go into stock for distribution.

A definite requirement as to the H-ion concentration in solution was applied first to Bacto-Peptone.

It is standardized as to its Tryptophane content and supports vigorous Indol production within 24 hours after inoculation.

Bacto-Peptone has passed the experimental stage and has proved its absolute dependability for all nutritional requirements of Bacteriology.

Bacto-Peptone stands on its own merits and completely substantiates all claims made for it.

The additional equipment which we were forced to install in order to furnish the unprecedented quantities of Bacto-Peptone requisitioned for the U. S. and allied military establishments enables us to take care of all orders, irrespective of size, promptly and uniformly.

For more complete description send for Bulletin 20.

Carried in stock by the principal dealers in Scientific Supplies

DIGESTIVE FERMENTS COMPANY

DETROIT, MICHIGAN, U. S. A.

TURN FORWARD TO PAGE VI FOR OTHER DIFCO PRODUCTS

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 West Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Avenue, Boston, Mass.

Subscription price, \$4 per year. American Public Health Association membership, including subscription, \$5 per year.

SEPTEMBER, 1920

CONTENTS

Vol. X, No. 9

	Page
State and Municipal Meat Inspection..... By John Roberts.	697
Recovery of Streptococcus Hemolyticus from Restaurant Tableware..... By Clarence C. Saelhof and W. J. R. Heinekamp.	704
On the Solution of Pneumococci by Bile..... By F. B. Kelly.	708
City Health Bulletins: Their Use and Misuse, the Necessity for Additional Mailing Privileges By Max J. Colton.	712

Continued on Page VII

Excellent *Building* Food For Growing Children

(and for all ages)



The Original and Genuine

Horlick's Malted Milk fortifies active, growing young minds and bodies with highly efficient and inviting nourishment—properly balanced for building bone and flesh.

Its strengthening effect is of utmost benefit now during the strenuous school season.

Serve it to your children in place of tea or coffee. It aids digestion and adds zest to every meal. Provide it for their school luncheons and in the afternoon when tired from play.

**"HORLICK'S" IS AS GOOD FOR "GROWN-UPS"
AS FOR THE YOUNG—KEEP A JAR AT HOME**

Avoid Imitations

HYCLORITE

CONCENTRATED
SODIUM
HYPOCHLORITE

"Always Ready—No Time Lost to Prepare"

IT IS A RAPID solvent of necrosed tissue even in high dilution.

The simple addition of water makes, in one minute, a correct Dakin's solution (no testing necessary), which is less irritating than the Dakin's solution made in the ordinary laborious way.

Is successful without CARREL technic.

Prepared to a uniform and definite hypochlorite strength (Na OCL 4.05%) and exceedingly low alkalinity. ($\frac{1}{4}$ of 1%). Possesses remarkable keeping qualities.

Can be used full strength or diluted according to physicians' or surgeons' need.

Accepted by A. M. A. (N. N. R.)

Write for sample and literature to

BETHLEHEM LABORATORIES, Inc.

BETHLEHEM, PA.

*Manufactured by
General Laboratories
Madison, Wis.*

*For
BETHLEHEM LABORATORIES, Inc.
Distributors.*

Continued from Page V

	Page
Ideals in the Organization of an Industrial Medical Service.....	715
By Emery R. Hayhurst, Ph. D., M. D.	
Organization of Control of Pasteurization.....	716
By Frederick O. Tonnev, M. D.	
Public Water Supply Contaminated by an Interconnected Private Water Supply...	724
By Caleb Mills Saville.	
Campaign Against Malaria in Cuba, 1918-19.....	728
By F. Villucndas, M. D.	
The Country Slaughterhouse; How to Build It.....	731
By G. H. Parks.	
Editorials:	
Education and Health Administration.....	734
Modern Medicine. (D. G.).....	735
Insignia for the A. P. H. A.....	736
Books and Reports Reviewed.....	737
Association News:	
Health Employment Bureau	740
List of New Members	741
Percentages of Quotas Filled	742
Report of Committee on State Health Societies.....	742
Exhibits at San Francisco	748
Public Health Notes	750
State Health Notes	750
Conventions, Conferences, Meetings	756
Industrial Hygiene and Occupational Disease.....	757
Public Health Laboratory Notes	760

INDEX TO ADVERTISERS

	Page		Page
BIOLOGICAL PRODUCTS		Spencer Lens Company.....	XXVIII
Bethlehem Laboratories	VI	Thomas Company, Arthur H.....	II
Harmer Laboratories	X	Will Corporation	XIV
Illinois Research Laboratories.....	XXVIII	LIQUID CHLORINE & APPARATUS	
Lederle Antitoxin Laboratories.....	XXXIV	Electro Bleaching Gas Company..	XIII
Mulford Co., H. K.....	XVII	Wallace & Tiernan Co., Inc.....	XII
Squibb & Sons, E. R.....	XV	POSITIONS WANTED	740
FOOD PRODUCTS		PUBLIC HEALTH COURSES	
Borden's Farm Products Company,		Harvard Medical School.....	XXVII
Inc.....	XXVIII	Johns Hopkins University.....	XXVII
Horlick's Malted Milk Co.....	V	University of Pennsylvania.....	XXVII
Mellin's Food Company	XIV	Yale University	XXVII
Quaker Oats Company.....	XXIII	SANITARY ENGINEERS	
HELP WANTED	740	Fuller & McClintock.....	XXXIII
INSURANCE CO. SERVICE		Hill and Ferguson.....	XXXIII
TO HEALTH OFFICERS		Hoad & Decker.....	XXXIII
Metropolitan Life Insurance Co....	XXIV	Keel & Conklin.....	XXXIII
Prudential Insurance Company of		Metcalf & Eddy.....	XXXIII
America	XXV	Weston & Sampson.....	XXXIII
LABORATORIES		SAN FRANCISCO HOTELS	
Abbott Laboratories	XI	Palace Hotel	XXXII
Bendner & Schlesinger.....	XXXIII	Whitcomb Hotel	XXXI
Boston Bio-chemical Laboratory...	XXXIII	STEREOPTICONS AND MOTION PICTURES	
Pease Laboratories, Inc.....	XXXIII	Educational Exhibition Co.....	759
LABORATORY APPARATUS AND SUPPLIES		National Motion Picture Co.....	759
Bausch & Lomb Optical Co.....	XXXVII	Victor Animatograph Co.....	XXI
Central Scientific Company.....	XVIII	DON'T OVERLOOK THESE	
Daigger & Co., A.....	XX	American Telephone & Telegraph	
Digestive Ferments Company.....	IV	Company	XIX
Elmer & Amenc.....	Back Cover	Associated Service Bureau.....	XXXIII
Grolier Company, Emil.....	XXX	Burnitol Manufacturing Co.....	XXI
International Equipment Company...	XIII	Clay Products Association.....	XXII
E. Leltz, Inc.....	XXVI	Globe-Werthecke Co.....	XXIX
Machlett & Son, E.....	XXIX	Pero Sanitary Drinking Fountain	
Mahady Company, E. F.....	VIII	Company	759
Parke, Davis & Co.....	IX	Railway Utility Company.....	XX
Physicians Laboratory Supply Com-		Stearns' Electric Paste.....	XXXIII
pany	XXX		
Sargent & Co., E. H.....	XVI		

Laboratory Apparatus and Supplies

COMPLETE EQUIPMENT FOR BACTERIOLOGICAL AND PATHOLOGICAL LABORATORIES

Microscopes	Centrifuges (2-tube, 4-tube and 8-tube combination heads.)	Petri Dishes
Microscope Lamps		Culture Tubes
Mechanical Stages		Chemical Tubes
Dark Field Illuminators	Centrifuge Tubes	Flasks (Culture, filter, Erlen- meyer, boiling, volu- metric.)
Haemocytometers	Babcock Bottles	Cylinders
Stage Micrometers	Babcock Centrifuges	Graduates
Eye Piece Micrometers	Sputum Shakers	Pipettes (Plain and graduated)
Micro Slides	Pipette Boxes	Porcelain Ware
Micro Cover Glasses	Petri Dish Boxes	Burettes
Hang Drop Slides	Wassermann Racks	Burette Stands, Clamps, etc.
Microscopical Stains (Dry and solution)	Water Baths	Filter Paper
Lens Paper	Autoclaves	Bacto Culture Media
Cedar Oil	Incubators	
Xylol	Hot Air Sterilizers	
Nichrome and Platinum Loops	Drying Ovens	
	Test Tube Baskets	
	Test Tube Racks	

Chemicals and Reagents

The above is a list of some of the articles which we carry in stock ready for immediate shipment.

ITEMIZED QUOTATIONS GLADLY RENDERED UPON
REQUEST

We specialize in equipment for Board of Health Laboratories and solicit your request for information along these lines.

E. F. MAHADY COMPANY
671 Boylston Street BOSTON, MASS.



Bacteriologic Peptone

Meets every
need for
a standard
peptone

BACTERIOLOGIC PEPTONE, P. D. & CO., is an American-made product that is proving its excellence in all requirements of the biological and bacteriological laboratory. Its use in the production of diphtheria and tetanus toxins, vaccines, sera, etc., is commended by the highest authorities.

BACTERIOLOGIC PEPTONE, P. D. & CO., has demonstrated its efficiency in the cultivation of organisms and in the various formulæ in which a standard peptone is necessary. It is used in the biologic analysis of milk, water, foods and soil, in public-health work, and in standardization of disinfectants.

BACTERIOLOGIC PEPTONE, P. D. & CO., is *uniform in composition, readily and completely soluble, correct in chemical structure.*

Literature and quotations will be promptly supplied on request.

DETROIT, MICHIGAN,
U. S. A.

Parke, Davis & Co.



Standardized and Tested Bacteriological Dyestuffs

EVERY bacteriological dye or stain released by the Harmer Laboratories Co. has been carefully standardized and rigidly tested to meet the requirements of the best recognized technique.

For this reason your results with Harmer Dyestuffs are invariably uniform and reliable, for we fully realize the importance of results that often depend on the purity and trustworthiness of bacteriological dyes.

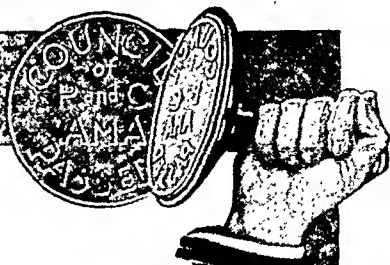
This rigid testing, which further safeguards our care in production, has resulted in a wide-spread confidence in Harmer Dyestuffs and their use in the most exacting laboratories and hospitals.

Harmer Bacteriological Dyestuffs are stocked by leading dealers or may be obtained direct from us. Specify them for dependable results.

Do you have our booklet, "Biological Dyestuffs & Rare Organic Chemicals"? A post card brings it without obligation.

The **HARMER**
LABORATORIES
PHILADELPHIA

COUNCIL-PASSED



Chlorazene (Abbott). **The Dakin Antiseptic.** A chlorine-bearing antiseptic; soluble in water; many times more powerful than phenol, but virtually neither irritant nor toxic.

Dichloramine-T (Abbott). Chemically similar but soluble only in oils, preferably Chlorcosane; useful when intense and prolonged germicidal action is required.

Barbital (Abbott). **Hypnotic.** Diethylbarbituric acid; introduced as veronal; best for inducing sleep and sedation; considered safest and least depressant.

Cinchophen (Abbott). **Uric Acid Eliminant.** Phenylcinchoninic acid; true to label; Uric acid output increased at times as much as 300%; used in gout, rheumatism, neuritis, and retention headaches.

Procaine (Abbott). **Local Anesthetic.** Only about one-seventh as toxic as cocaine; neither irritating nor habit-forming; no narcotic blank required for its purchase.

Digipoten (Abbott). **Heart Tonic.** Powder or tablets containing the desirable medicinal glucosides of prime leaf; standardized by the one hour frog method; soluble in dilute alcohol.

Bilein (Abbott). **Cholagogue.** For correction of biliary stasis and deficiency; useful in intestinal indigestion, liver torpor and early gallstone disease.

Benzyl Benzoate (Abbott). **Antispasmodic.** By Macht and others said to be effective in pains and distress due to spasms of smooth muscle, as in dysmenorrhea, colics, dysentery, tenesmus, asthma.

Parresine (Abbott). **Dressing for Burns.** Wax compound to be melted and applied with brush or atomizer; forms a thin non-adherent shell; relieves pain, expedites healing.

Obtainable through druggists on prescription or direct from us. Leaflets special to each item sent on request.

The Abbott Laboratories

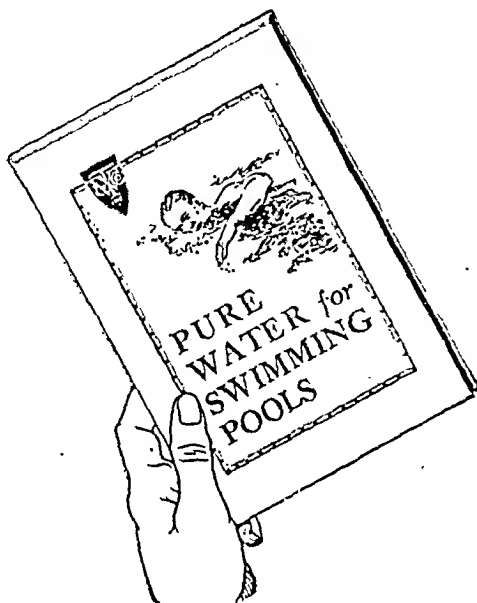
Home Office and Laboratories

Dept. 3, Chicago, Ill.

New York Seattle San Francisco
Los Angeles Toronto Bombay



Tested for Quality



JUST OUT!

the latest W & T Technical Publication.

A complete and up-to-date treatise on Swimming Pool Sanitation.

Every bather pollutes a Swimming Pool—this pollution cannot be stopped but the danger can be overcome by disinfection with

LIQUID CHLORINE
applied by

'W & T' APPARATUS

Liquid Chlorine affords the cheapest and most efficient means of *Swimming Pool Disinfection*—just as it does for drinking water.

Cost—about *six cents* daily for a 50,000 gallon pool.

Wallace & Tiernan Co., Inc.

349 Broadway, New York

Philadelphia Chicago San Francisco Pittsburgh
Dallas Kansas City Atlanta



USE COUPON TO SECURE COPY

WALLACE & TIERNAN CO., Inc.

349 Broadway, New York City

Please send a free copy of your new thirty-two page publication
"Pure Water for Swimming Pools."

Name.....

Street Number.....City and State.....

Official Position.....with.....

A. J. R. H.

Liquid Chlorine

Dominates The Field

Chlorination of Public Water Supplies has saved more lives from death by Typhoid in the last 10 years than the United States forces lost in the World's War.

If *YOUR* community is still unprotected, write for interesting particulars as to low cost, etc.

Look for the RED Cylinder

ELECTRO BLEACHING GAS COMPANY

Pioneers and Leading Manufacturers of Liquid Chlorine

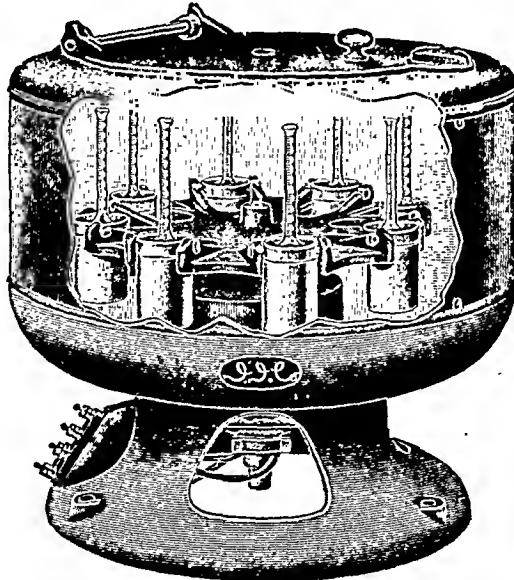
Main Office: 18 East 41st Street, New York

Plant: Niagara Falls, N. Y.

Chicago Address: 11 So. La Salle Street

BOARD OF HEALTH LABORATORY—Milk Testing

Electric Babcock
Testers
8-bottle
16-bottle
24-bottle
sizes



Babcock Test
Glassware
Massachusetts
Tested

INTERNATIONAL EQUIPMENT COMPANY

Send for Catalog Cp.

352 Western Avenue, Brighton, BOSTON, MASS.

The
Management
of an
Infant's Diet

DIARRHEA

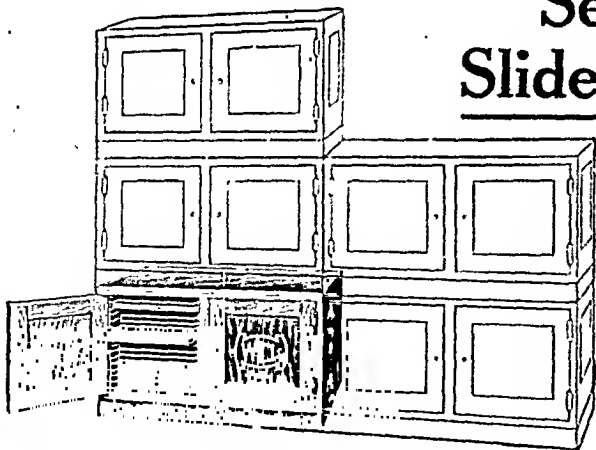
The importance of nourishment in intestinal disturbances that are so common during the warm weather is now recognized by physicians, and it is also appreciated that the nutrition furnished must be somewhat different than the milk modification usually supplied to the normal infant.

Food elements that seem to be particularly well adapted, mixtures that are suitable to meet the usual conditions, and the general management of the diet, are described in our pamphlet—"The Feeding of Infants in Diarrhea"—a copy of which will be sent to any physician who desires to become familiar with a rational procedure in summer diarrhea.

Mellin's Food Company

Boston, Mass.

Sectional Slide Cabinets



Exactly Suited to the
Needs of

Hospitals

and

Pathological

Laboratories

Each Unit Is Com-
plete and Accommo-
dates 1500 Slides.

Can be Built Up Like a Book Case

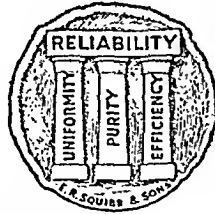


The Will Corporation

GLASSWARE • CHEMICALS • LABORATORY APPARATUS

ROCHESTER, N. Y.

PURITY



POTENCY

The Seal of Trustworthiness

SQUIBB

Antitoxins
Serums
Vaccines
Chemicals

Seasonable Biologics:-

TYPHOID VACCINE

(Plain or Combined)

PASTEUR ANTI-RABIC VACCINE

(21 Treatments Complete)

TETANUS ANTITOXIN

(Immunizing or Curative)

THROMBOPLASTIN

(Local or Hypodermic)

For The Venereal Campaign:-

SOLARGENTUM

(20% pure silver in colloidal form)

PROTARGENTUM

(8% pure silver in organic combination)

PROPHYLACTIC OINTMENT

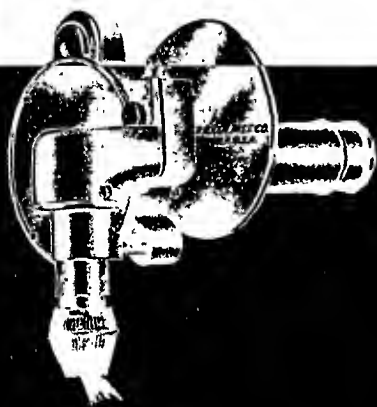
(30% Calomel)

E. R. SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.
80 Beckman St., New York New Brunswick, N. J.

—IMPROVED— DARE HEMOGLOBINOMETER

With this instrument, which is electrically illuminated, all determinations are made with a standard source of light, which is steady, uniform and convenient. The salient advantages of this instrument are:



Blood is examined as drawn from the patient and is not subject to the errors of dilution. Quick-Exact-Reliable. No dark room necessary.

For those who prefer it, the Candle Type of instrument can be supplied.

The electrical attachment can be adapted to any Dare Hemoglobinometer now in use.

PRICES

Electrically Illuminated	\$39.00
Candle Type	30.00
Electric Camera adapted to any Dare Hemoglobinometer	9.00
Certified Pipettes, per set	1.50

E. H. Sargent & Company

Importers, Makers and Dealers in Chemicals
and Chemical Apparatus of High Grade Only

155-165 E. Superior St.

Chicago, Ill.

Mulford Initiative

In the production of Smallpox Vaccine Virus in the United States, the

Mulford Laboratories First

Clipped and washed calves before vaccination.

Kept and handled calves under hospital conditions, instead of in stables.

Killed the calves before removing vaccine.

Conducted a post-mortem on the carcass to determine freedom from disease.

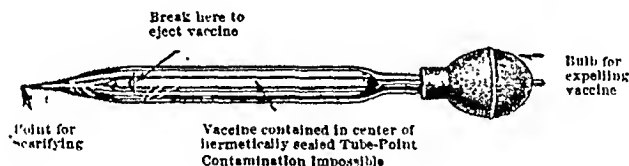
Discarded "ivory" or bone points.

Filled vaccine into market containers by vacuum, to avoid contamination.

Made cultural tests for purity, including tests for anaerobes (bacteria that grow best in absence of air).

Made animal tests for safety.

Kept vaccine at freezing temperature to insure potency.



For **school children, industrial workers**, at all times and under all conditions, use the

Mulford Vaccine Tube-Point

The only combined **point** and virus container on the market.

New illustrated booklet "*Smallpox Vaccine*" sent free, upon request.

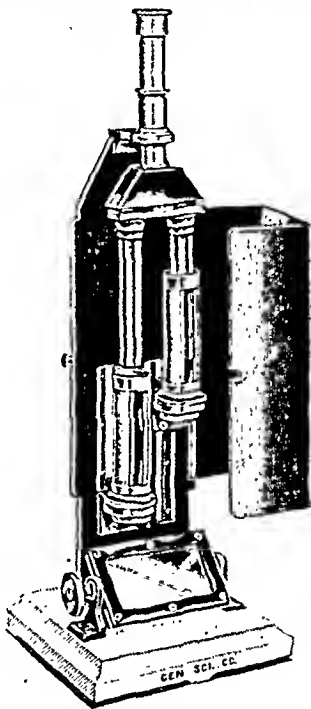
H. K. MULFORD CO., Philadelphia, U. S. A.

46476

Mulford

THE PIONEER BIOLOGICAL LABORATORIES

WE HAVE IN STOCK
For
IMMEDIATE DELIVERY
A Limited Quantity of
ORIGINAL
FRENCH DUBOSQ COLORIMETERS



No. 3047

We shall be pleased to receive orders for these to be filled from stock in order of priority. We have orders placed for additional stocks against which we shall be pleased to receive orders for future delivery. The present favorable exchange rate enables us to offer them at a lower rate than any previously advertised.

No. 3047 Colorimeters, Dubosq, Original French Make, the standard instrument for the determination of nitrogen, urica, ammonia, creatine, etc., in blood and urine. Also used for a variety of other determinations in physiological and analytical chemistry. Complete with a series of colored, ground and daylight glasses.

No.	A	B
Height of cylinders, cm.	5	10
Each	\$110.00	\$135.00

CENTRAL SCIENTIFIC COMPANY

LABORATORY SUPPLIES

Apparatus Chemicals

460 E. Ohio St.,

Chicago, U.S.A.

U.S.A.

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 W. Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Ave., Boston, Mass.

Subscription price \$4 per year. American Public Health Association membership, including subscription, \$5 per year.
Subscriptions and memberships may be sent to the A. P. H. A., 169 Massachusetts Ave., Boston, Mass.

Vol. X

SEPTEMBER, 1920

No. 9

STATE AND MUNICIPAL MEAT INSPECTION

JOHN ROBERTS,

*Editorial Office, Bureau of Animal Industry,
U. S. Department of Agriculture.*

Another report of importance to health officers. It tells plainly where deficiencies lie in existing systems of meat inspection. With inspection there is much condemnation of meat so that the potential risk of consuming diseased meat is vastly greater in absence of inspection. Health officers realize the dangers and will welcome proper legislation.

IT is generally known that the Federal meat-inspection service covers not more than about two-thirds of the total meat produced in the United States. The remainder of course is subject to State and local inspection, but to what degree this is carried on has been wholly a matter of conjecture.

In these times of high meat production, it may be of interest first to ascertain just what the above proportions represent in pounds of meat. Estimates of total production, consumption, etc., of meat are made annually in the Bureau of Animal Industry, U. S. Department of Agriculture, and from these it appears that the total quantity of dressed meat, excluding lard, produced in the United States during the calendar year 1918 was 18,041,166,000 pounds. This was the largest production on record, and the in-

dications point to a similarly large output in 1919. Of the total production in 1918, it was estimated that 66.55 per cent was inspected by the Government. Therefore one-third, or 6 billion pounds, was not Federally inspected. Since only U. S. inspected meats and those specifically exempted from inspection by law can be exported, it necessarily follows that practically all this nonfederally inspected meat was consumed in this country. Furthermore, it is doubtless true that a large proportion of it was slaughtered not only without adequate inspection by State or city, but without any inspection whatever. And, finally, it is generally understood that such meat would be handled in slaughterhouses that receive a much larger percentage of diseased and suspicious-looking animals than is the case in Federally-inspected

establishments. It can easily be seen, therefore, how dangerous uninspected meat may be to the public health.

The Bureau of Animal Industry has from time to time made efforts to stimulate the inspection of meat by State and local authorities as a supplement to the Federal system. It has been recognized, however, that the situation in this respect and in respect to the sanitary condition of the average country slaughterhouse still leaves much to be desired.

No accurate information as to either the quantity or quality of State and municipal inspection of meat has so far been available, so in order to obtain data on the present status of the matter, Dr. John R. Mohler, chief of the bureau, authorized a questionnaire to be prepared and sent to the States and to all cities and towns shown by the census to have a population of 5,000 or more.

It may here be stated that the questionnaire concerning State meat inspection resulted in a virtual blank. In some cases no replies have been received and in no case was there reported any system of State inspection that could be regarded as thoroughly adequate. The great majority of States reported no meat inspection of any sort. A few reported ante-mortem examination only, or supervision of slaughterhouses and markets only, and in some of these cases the work had been suspended because of the war. This paper, therefore, will be confined to the discussion of municipal meat inspection.

The main facts brought out by the investigation are set forth in the summary table on the next page, following which is a brief résumé of the salient features.

NUMBER OF CITIES MAINTAINING INSPECTION

It is satisfactory to note that the mere fact of sending out the questionnaires has borne fruit in the way of improvement. The replies from several cities indicated that meat inspection was either just begun or was to begin shortly. In a num-

ber of other cases advice was asked on the subject, and these requests were promptly attended to by Dr. R. P. Steddom, Chief of the Federal meat-inspection service.

The questionnaire was sent to somewhat more than 1,400 cities of which 574 responded. It is assumed that most if not all of the remainder had no inspection. Of those responding 379 reported no inspection, which left 195 cities in which meat inspection of varying degrees of efficiency was conducted.

The summary table shows that Massachusetts easily leads in number of cities maintaining inspection, the most prominent of the other States in this respect being New York, New Jersey, California, Ohio, and Texas. The reports indicate, however, that the Federal standard of inspection is more uniformly maintained in California and New York than in the other States mentioned. It should be noted, too, that California is far ahead in number of inspectors devoting their whole time to the inspection of meat.

MUNICIPAL AND CENTRAL ABATTOIRS

One of the principal objects of the questionnaire was to ascertain how many municipal and central, or public slaughterhouses there were in the country and what was the nature of the inspection conducted in connection with them. It is recognized that the public abattoir, whether municipally or privately owned, affords the most practical way in which a community can properly protect its citizens against diseased and unwholesome meats, because only at such central places can the requirements of a thoroughly efficient system of meat inspection be economically carried out.

There were reported on the questionnaires 20 municipal and 28 central abattoirs. It is doubtful, however, whether in some cases the questions were properly understood. For example, in four instances both municipal and central abattoirs were reported in the same city, and

at two of these places there was no inspection whatever by the city authorities. In other cases the answers showed there was a more or less cursory inspection of meat at the markets and shops only, with no examination of the carcasses and viscera at the time of slaughter. The latter is absolutely necessary to the proper detection of disease in the meat, to say nothing of the antemortem, or inspection of the live animal before slaughter.

After sifting the reports, it would appear that the number of cities where municipal or central abattoirs are maintained should be reduced to 35, and at five of these there is no inspection at the time of slaughter, while 11 more fail

to report an antemortem inspection. The abattoirs are located in the following cities:

<i>Municipal Abattoirs</i>	Hartford, Conn.
Bridgeport, Conn.	Atlanta, Ga.
New Britain, Conn.	Augusta, Ga.
Albany, Ga.	Columbus, Ga.
Baton Rouge, La.	La Grange, Ga.
Raleigh, N. C.	Savannah, Ga.
Winston-Salem, N. C.	Terre Haute, Ind.
Devils Lake, N. Dak.	New Orleans, La.
Grand Forks, N. Dak.	Pittsfield, Mass.
Ogdensburg, N. Y.	Detroit, Mich.
Beaumont, Tex.	Moorhead, Minn.
Paris, Tex.	St. Cloud, Minn.
Port Arthur, Tex.	St. Paul, Minn.
Taylor, Tex.	Meridian, Miss.
Winchester, Va.	Lincoln, Nebr.
<i>Central (public) Abattoirs</i>	Nashville, Tenn.
Anniston, Ala.	Norfolk, Va.
Birmingham, Ala.	Roanoke, Va.
	Yakima, Wash.

Summary, by States, of reports from cities concerning municipal meat inspection.

State	Cities Reporting	Cities Maintaining Inspection	Slaughterhouses			Inspectors Engaged				Annual Cost Of Meat In-pection
			Municipal	Central	Private	Whole Time	Part Time	Average Salary		
United States....	574	195	14	21	1385	226	182	\$1,442	\$447,095	
Alabama.....	7	5	..	2	7	1	5	\$1,533	\$ 2,500	
Arizona.....	6	1	..	..	9	..	1	1,620	810
Arkansas.....	5	2	..	..	15	..	2	1,500	1,800
California.....	20	9	..	..	82	44	5	1,637	81,718
Colorado.....	8	4	..	..	18	8	5	1,343	16,450
Connecticut.....	12	2	2	1	11	3	..	1,420	8,000	
Delaware.....	1	1	..	..	6	1	..	1,350	1,350
Dist. of Columbia	1	1	..	..	12	2	..	1,100	2,200
Florida.....	5	4	..	..	6	2	2	1,360	2,580
Georgia.....	10	6	1	5	7	8	6	1,600	16,400	
Idaho.....	3	..	..	..	6	..	..	..	..
Illinois.....	37	4	..	..	34	..	6	1,350	1,850
Indiana.....	28	3	..	1	57	4	4	1,050	6,800	
Iowa.....	16	4	..	..	20	4	1	1,410	4,320
Kansas.....	14	1	..	..	31	..	2	1,500	1,000
Kentucky.....	8	3	..	..	44	14	2	1,350	16,200
Louisiana.....	6	4	1	1	10	18	3	1,740	19,120	
Maine.....	7	1	..	..	7	1	..	1,500	1,800
Maryland.....	3	1	..	..	51	1	3	1,200	2,000
Massachusetts...	50	44	..	1	83	5	50	1,036	22,548	
Michigan.....	21	6	..	1	100	5	5	1,455	11,455	
Minnesota.....	11	7	..	3	12	6	2	1,293	9,360	
Mississippi.....	4	1	..	1	9	..	1	1,200	1,200	
Missouri.....	16	3	..	..	65	5	1	1,440	7,420
Montana.....	5	3	..	..	14	1	2	1,620	1,800
Nebraska.....	11	2	..	1	25	6	..	1,450	11,200	
Nevada.....	1	..	..	..	3	..	..	..	..
New Hampshire....	5	1	..	..	9	..	1	..	..
New Jersey.....	29	11	..	..	38	4	17	1,574	18,947
New Mexico.....	1	..	..	..	2	..	..	..	..
New York.....	38	14	1	..	53	11	10	1,400	22,117	
North Carolina...	7	4	2	..	5	2	3	1,500	4,700	
North Dakota...	3	1	2	..	2	..	1	..	600	
Ohio.....	41	9	..	..	142	22	16	1,355	47,920
Oklahoma.....	2	..	..	..	..	..	..	..	..
Oregon.....	6	1	..	..	9	5	..	1,896	9,480
Pennsylvania.....	46	4	..	..	181	8	3	1,350	15,640
Rhode Island....	7	3	..	..	10	2	1	1,350	3,840
South Carolina....	2	1	..	..	2	..	1	..	900
South Dakota....	2	..	..	..	2	..	..	..	..
Tennessee.....	5	3	..	1	27	4	2	1,140	6,550	
Texas.....	18	9	4	..	33	11	6	1,353	20,720	
Utah.....	3	2	..	..	10	8	..	1,485	12,200
Vermont.....	4	..	..	..	4	..	..	..	..
Virginia.....	7	4	1	2	10	2	3	1,733	6,300	
Washington.....	8	2	..	1	14	6	..	2,040	13,500	
West Virginia....	2	1	..	..	6	..	1	..	..
Wisconsin.....	20	3	..	..	79	2	9	1,600	11,800
Wyoming.....	2	..	..	..	3	..	..	..	..

It may be noted that the abattoirs are widely distributed geographically and that the State of Georgia leads with a total of six. Texas has four, all municipally owned, and Connecticut, Minnesota and Virginia each has three.

The total number of private slaughterhouses reported from the 574 cities is 1,385. It goes without saying that many of these are extremely insanitary and a menace to the public health. It is greatly to be hoped that the number will be reduced and replaced by municipal and central abattoirs, where proper sanitary conditions can be more easily controlled and where all other operations can be carried on more efficiently and economically, both for the butchers and the city authorities.

On this point the questionnaire returned from Grand Forks, N. S., bears eloquent testimony. As shown on the list, there is a municipal abattoir at this place, although they are unable to support a qualified inspector. A letter accompanying the report contains this paragraph:

"Our operation of the municipal abattoir has proved a wonderful stride along sanitary lines. We have thus eliminated the operation of a number of private owned slaughterhouses where conditions were simply horrible. Outside of the lack of meat inspection, our slaughtering conditions are very satisfactory."

The Bureau of Animal Industry is prepared to give every assistance in its power to any city contemplating an improvement in its meat-inspection service, and to this end will be glad to furnish copies of its regulations and any other information or advice desired. The bureau has a model plan and specifications and other details concerning the designing, construction, equipment and operation of municipal abattoirs that will also be furnished upon request.

NUMBER OF INSPECTORS, THEIR SALARIES AND ANNUAL COST OF INSPECTION

The reports showed that there were

226 inspectors devoting their whole time to municipal meat inspection and 182 others engaged part of their time. The latter, of course, are mostly in the smaller cities and towns where the inspectors' duties include supervision of milk, other foods, etc. The leading states where city inspectors devote their whole time to meat inspection are California (44), Ohio (22), Louisiana (18), Kentucky (14), New York (11), and Texas (11). The leading cities are New Orleans, La., (17); San Francisco, Calif., (14); Louisville, Ky., (14); Cleveland, Ohio, (14); Oakland, Calif., (12); Los Angeles, Calif., (11); Denver, Colo., (8), and Columbus, Ohio, (8).

The salaries of meat inspectors vary very considerably: the lowest, \$900, is reported from several places, while the two highest are the chief of bureau at Cleveland, Ohio, who receives \$3,150 and the chief inspector at New Orleans, La., with a salary of \$3,000. The state averages are lowest in Massachusetts (\$1,036) and Indiana (\$1,050) and highest in Washington (\$2,040), Oregon (\$1,896), and Louisiana (\$1,704). The average salary of all whole-time inspectors for the United States is \$1,442.

The expenditures by cities for meat inspection aggregate \$447,095. The total cost for the nine cities in California was \$81,718, which is a far larger amount than was spent in any other state. The next three states in order are Ohio, nine cities, \$47,920; Massachusetts, 44 cities, \$22,548, and New York, 14 cities, \$22,117. Of the individual cities San Francisco, Calif., ranks highest with \$27,168, Cleveland, Ohio, next with \$20,860, followed by Los Angeles, Calif., \$20,000; Oakland, Calif., \$19,000; Columbus, Ohio, \$15,640; Louisville, Ky., \$15,000, and New Orleans, La., \$15,000.

Only a few cities attempt to reimburse themselves for the expense of meat inspection by charging fees. Those reporting this system are Birmingham, Ala.; Richmond, Calif.; Tampa, Fla.;

Cedar Rapids, Iowa, and Saranac Lake, N. Y., while Des Moines, Iowa, reported receipts in fees amounting to about one-third of the total cost of inspection. The amount of the fees is not mentioned except in the case of Cedar Rapids, where there is no slaughtering in the city and the fees are paid by farmers, 25 and 50 cents per carcass, the total for the year being \$360.

There is no objection to a city charging a fee for meat inspection, provided the fees do not go directly to the inspector as his salary. Cost of inspection should be included in the city's budget.

CHARACTER OF INSPECTION

Some important features of meat inspection included in the questionnaire, not shown in the summary table may be briefly mentioned.

Regarding the standard of inspection, 82 replies, representing 42% of the total cities reporting meat inspection, stated that they based the inspection on the Federal regulations. However, only 46 cities stated specifically that an antemortem as well as postmortem examination was conducted.

CITY MEAT INSPECTION ORDINANCES

Several cities sent copies of the ordinances under which the meat inspection is conducted, and these have been examined in the Meat Inspection Division. Some more or less serious objections are noted, as for example, in the case of a city in Michigan which does not provide for antemortem inspection and also permits the slaughterer to inspect and stamp meats. The antemortem examination is not taken into account in a number of instances, while in others the ordinances are not comprehensive enough for the requirements of a thorough inspection system.

Of the large cities, San Francisco and Philadelphia have good ordinances, although that of Philadelphia does not deal with the inspection of meats.

Of the smaller cities, the ordinance of

Columbus, Ga., may be cited. In some respects it is quite strict; it does not take a chance even on imported meat that bears the Federal stamp, as such meat cannot be sold unless it has also passed the city inspection and has the city stamp on it. Again, section 419 (2) (c) seems to impose an equipment expense that would not be justified in small establishments. However, it lacks in the respect that it allows wooden floors in slaughtering compartments, which is contrary to Federal requirements.

CONDEMNATIONS — PERCENTAGE, CHIEF CAUSES AND DISPOSAL

The great majority of the cities were unable to supply data in pounds of the quantity of meat inspected and condemned in 12 months. Many kept records of the weight of meat condemned, but not of that inspected, while others had records in animals and in carcasses and parts of carcasses. There were 37 cities, however, that gave the weight of both inspected and condemned meat, and thus permitted the calculation of the percentages.

The percentages show great variations, ranging from 0.07 to 16.93. The latter figure, however, involves only a very small quantity of meat and may be considered abnormal and disregarded. The real maximum is the next highest on the list, 8.27%, reported from New York. Wilmington, Del., with the lowest figure, 0.07, reports that meat inspection can not be adequately performed as there is only one inspector to cover all markets and stores, as well as five slaughterhouses in which approximately 35,000 animals are slaughtered in a year. Hence the quantity of meat condemned is probably far smaller than it should be. The very low figure for Kansas City, Mo., 0.11%, may be accounted for by the fact that the work there consists entirely of "Reinspection of meat immediately after being hung in markets." Much of this meat may have previously passed the

Federal inspection when it was slaughtered.

It may be of interest to note here that the proportion of meat condemned in all establishments under the Federal inspection is probably within a very small fraction of one per cent. A calculation was made for the fiscal year 1917 which showed that the total condemnations, including reinspected products, were 1.08% by weight of the estimated total inspections. When this figure is compared with the above-mentioned New York percentage, 8.27, we may, perhaps, get some idea of the potential difference in quality between the animals that come under the Federal inspection and those that are marketed in places where it is known they will not have to run the gauntlet of the Government inspection.

Regarding the chief causes of condemnation reported on the questionnaire the usual cause of condemnation where market inspection is concerned is taint or decay of the meat. Where animals and carcasses are inspected it is a case of "tuberculosis first and the rest nowhere." Hog cholera is frequently mentioned, and other diseases and conditions which are given are pyemia, emaciation, immaturity of calves, septicemia, actinomycosis, pneumonia, measles, parasites, caseous lymphadenitis, icterus, milk fever and glanders. The latter is in connection with the slaughter of horses in New York.

The disposal of condemned meats is generally satisfactorily accomplished by tanking, denaturing, burning, burying, etc. A few of the questionnaires, however, denoted unsatisfactory methods or a lack of care in dealing with this important matter. The following are quoted as examples, "Sent away," "Fed to hogs," "Given to man who gathers fats, etc.," "Garbage," "Left with dealer," and "Dealer allowed to dispose of it."

ODDMENTS FROM THE QUESTIONNAIRES

Many of the replies to the questionnaire deplored the absence or inefficiency of the meat inspection in the respective

cities. Here, for instance, is a note from the health officer of a town in Maryland, at which place there are 13 slaughterhouses and no inspection whatsoever:

"I wish you could stimulate the local governing body and persuade them as to the necessity of establishing meat inspection."

A similar complaint comes from the Food and Dairy Inspector of a city in Kentucky, where there are five slaughterhouses and no inspection:

"This is an important matter and I have been trying to bring about something of this nature. I will appreciate your help and suggestions along this whole field of slaughtering."

Even in an important city on the West Coast where there is a large force both of Federal and city meat inspectors, conditions are far from ideal because of the heavy work entailed in covering the markets, farmers, and private slaughterhouses. The chief city meat inspector, states that the ordinance providing for city meat inspection "makes provision for establishments to use a house mark on their products in case there is no inspector present at time of slaughter." He also adds, "We do not have sufficient help, and I am unable to give the slaughtering establishments the proper inspection they should have."

The Health Officer of a town in California throws out the following suggestion for meat inspection along coöperative lines in small cities:

"In my opinion, an inspection at the time of slaughter is badly needed, and should be taken up by some unit larger than the small city, i. e., by the county. Most cities of, say, from 5,000 to 10,000 population would refuse to put up the money necessary to maintain a satisfactory meat-inspection service. Several cities near together might unite on such a plan."

The report from a town in Pennsylvania (three slaughterhouses, no inspection), says, "It would be a fine thing to have an inspector here."

A city in Arkansas reports eight slaughterhouses and no inspection, and adds, "Our slaughterhouse conditions are bad; no inspection of meats provided for at all."

Losses of sheep caused by dogs are accentuated in the report from an important city in Massachusetts, wherein the official gives as one of the chief causes of condemnation, "Laceration of sheep from dogs."

A small town in Michigan at which there are three slaughterhouses reports through the mayor that there is no meat inspection "except when city physician is called." The only condemnation during the year was a cow that died during parturition. The mayor reports that the cow should have been made into fertilizer, but adds, "No trace can be found of what was done with the carcass."

The mayor of a small city in Missouri

is humorously pessimistic. In answer to the question, "At what places are meats inspected?" he says. "By housewife or at kitchen," and to Question 14, "Method of disposing of condemned meat," he replies: "Let the people eat it."

The report from a city in New York says there is inspection of meats at places of sale only and is signed by the "Plumbing Inspector."

One of the larger cities of Rhode Island reports five slaughterhouses and no inspection, and adds, "Everything goes in this town."

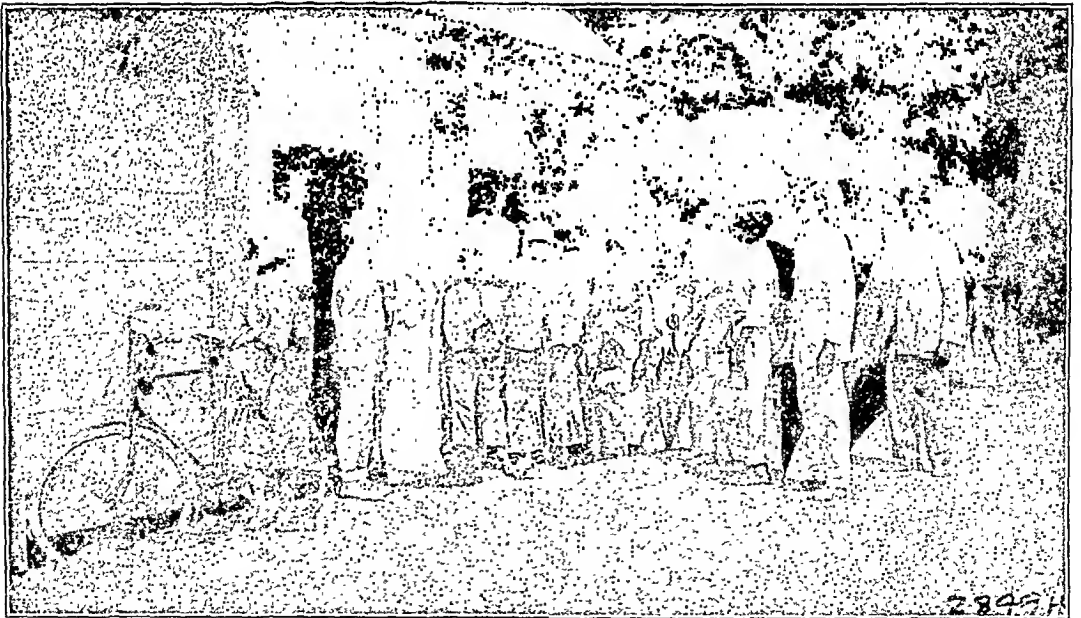
ACKNOWLEDGEMENTS

The writer desires to acknowledge his indebtedness to Dr. R. P. Steddon, chief of the Meat Inspection Division, Bureau of Animal Industry, and to Mr. G. H. Parks, expert in sanitation, of the same division, for advice and assistance in connection with this investigation.



WORLD-WIDE WORK OF INTERNATIONAL HEALTH BOARD

SEYCHELLES



A lecture and demonstration on hook worm disease in the far-away Seychelles Islands. Not even regions as remote as this are left untouched in the coöperative campaigns which the International Health Board—Rockefeller Foundation—and local health agencies throughout the world are waging against that disease. The lecturer stands before the doorway.

RECOVERY OF STREPTOCOCCUS HEMOLYTICUS FROM RESTAURANT TABLEWARE

CLARENCE C. SÆLHOF AND W. J. R. HEINERAMP,

*Departments of Bacteriology and Pharmacology, University of Illinois,
College of Medicine,
Chicago, Ill.*

"Dangers of dirty dishes" this paper might be termed. It is a quantitative presentation of just what these dangers are in public restaurants. They constitute a vexing problem to every health officer, and he needs the plain facts for the education of his public. With these, his people will back him in efforts to improve such places.

THE following experiments were performed to determine how commonly hemolytic streptococci could be isolated from the supposedly clean eating utensils obtained in a group of restaurants and cafés in Chicago.

Cummings (Am. Jour. Pub. Health, Vol. IX, No. 6, June, 1917, p. 424) reports that of 23 sets of tableware he recovered hemolytic streptococci in 91%; pneumococcus from 17% of nine sets of tableware; diphtheria from 2% of 26 sets of tableware; and *Streptococcus viridans* from two sets of tableware (100%). Lynch and Cummings (Am. Jour. Public Health, Vol. IX, January, 1919, p. 25) record that the average bacterial count in 54 specimens of water used to wash eating utensils was 4,000,000 per cc.

Our procedure for taking cultures was as follows: A large number of throat swabs were made and sterilized in test tubes in the hot air oven at 160° C. each day before being used. They were then moistened under aseptic conditions, in sterile, distilled water in order that the organisms might adhere to the swab.

The different articles, such as spoon, knife, rim of the water glass, surface of the plate, etc., were swabbed as they were placed before us on the restaurant tables. The swabs were brought back to the laboratory, and smeared over plain

agar plates (made neutral by means of the colorimetric method, using bromthymol-blue as an indicator) to which 7 drops of fresh blood had been added. These plates were incubated for 24 hours at 37° C. and at the end of that time we made macroscopic and microscopic examinations of the different types of colonies.

In making a macroscopic examination of the different types of colonies, the size, shape, margin, texture and color were noted under the hand lens so as to determine the type of organism as far as possible. In this manner, such colonies as *Streptococcus hemolyticus*, *Bacillus subtilis*, *Staphylococcus aureus* and *S. albus* were easily determined. A subsequent microscopic examination of the same colonies was made to verify the macroscopic findings, using ordinary and, when necessary, special stains. Sub-cultures of all suspicious colonies were made for further identification and upon special media, such as the sugars, gelatin, etc. whenever necessary. For animal experiments broth cultures were used.

The articles from which we obtained organisms were as follows: spoon, knife, fork, butter-dish, glass and plate. They were from nine different restaurants. An extra swab as a control was exposed to the air for approximately the

same length of time as was taken in swabbing the tableware. The data obtained are presented in Table I.

The groups of organisms encountered were not numerous. We were chiefly concerned with the hemolytic streptococcus. We found this organism in the percentages given in Table 2. Three different strains of hemolytic staphylococci were found; we did not test their pathogenicity on animals. Most of the strains of staphylococci isolated were *S. albus*; three strains isolated were *S. aureus*. The pneumococcus was typical of Type III, having the mucoid and slimy growth, a distinct capsule and fermenting mannitol and inulin. The strain of *B. coli* was identified by its odor, the shiny white colonies with dentate edges, its reaction with dextrose and lactose, and by its

morphology. Other organisms were encountered but were not identified.

The *Streptococcus hemolyticus* colonies were of the typical pin-point variety, having a sharp, clearly defined zone of hemolysis about them, and, on inoculation in broth, produced long chains of six, eight, and ten cocci as a rule; one strain producing chains of 16 to 20 cocci.

Each of the four strains of hemolytic streptococci, grown in broth culture, was inoculated in 1.5 cc. doses intravenously in rabbits, weight approximately 1200 grams. There occurred in all a loss of weight, and swelling of the joints. Death occurred in 24 to 60 hours. Post-mortems of these animals showed congestion of the internal viscera and lesions of the joints and endocardium. Cultures made from the joints and the heart's blood in each rabbit gave organisms identical with those injected.

TABLE I.*

Restaurant	Character of place	Spoon	Knife	Fork	Butterdish	Glass	Plate	Control
1	Fairly clean	<i>B. subtilis</i>	<i>Strep. hemolyticus</i> . <i>Staph. albus</i>	<i>B. subtilis</i>	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Staph. albus</i>	<i>Strep. hemolyticus</i>	.....
2	Clean	<i>Staph. albus</i>	<i>B. subtilis</i>	<i>B. subtilis</i>	<i>B. subtilis</i> ...	<i>Strep. hemolyticus</i>	<i>B. subtilis</i>	.....
3	Very dirty	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	.....
4	Reasonably clean	<i>Staph. albus</i>	<i>B. subtilis</i>	<i>B. coli</i>	<i>Staph. aureus</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	.....
5	Fairly clean	<i>Staph. albus</i>	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Staph. albus</i>	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Staph. albus</i>	.....
6	Dirty	<i>B. subtilis</i>	<i>Pneumococcus</i> Type III	<i>Staph. aureus</i>	.....	<i>B. subtilis</i>	<i>B. subtilis</i> <i>Staph. hemo.</i>	<i>B. subtilis</i> .
7	Fairly clean	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Strep. hemolyticus</i> <i>B. subtilis</i>	<i>B. subtilis</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Strep. hemolyticus</i>	.....
8	Fairly clean	<i>B. subtilis</i>	<i>Staph. albus</i>	<i>Staph. albus</i>	<i>Staph. albus</i> <i>B. subtilis</i>	<i>Staph. albus</i>	<i>Staph. albus</i> <i>B. subtilis</i>	.....
9	Dirty	<i>B. subtilis</i>	<i>Staph. albus</i>	No growth	.. .. .	<i>Staph. albus</i>	<i>B. subtilis</i>	.....

*Only the predominating organisms were classified.

TABLE 11.

Bacteria	No. of Examinations	Number Positive	Percentage Positive
<i>Streptococcus hemolyticus</i> ..	63	4	6.35%
<i>Pneumococcus</i>	63	1	1.60%
<i>B. coli</i>	63	1	1.60%
<i>Staphylococcus aureus</i>	63	2	3.20%
<i>Staphylococcus albus</i>	63	31	50.81%
<i>B. subtilis</i>	63	23	36.50%

DISCUSSION

It is evident from these results that the dishes and eating utensils are not sufficiently cleaned and washed to render them sterile. The dishes after being washed and drained usually are stacked on an open shelf exposed to dust and droplets from the sneezing, coughing, and spitting of both the employees and customers who may be carriers of virulent bacteria.

Direct contamination of eating utensils from the mouths of persons harboring virulent bacteria of various kinds naturally must occur. Many persons have sore throats, colds, influenza, and other contagious diseases and go about their business regularly and eat in public places. This source of dangerous bacteria is probably the most important one in contaminating eating utensils. Lynch and Cummings (*Am. Jour. Pub. Health*, Vol. IX, No. 1, January, 1919, pp. 24-38) isolated 12,000,000 organisms, many of which were streptococci, from the ladle of a spoon used by a streptococcus carrier. Hands, clothes, handkerchiefs, etc. of the customers harbor germs and no doubt further aid in carrying infection.

Another source is from indirect contamination. Cummings (*Am. Jour. Pub. Health*, January, 1919, Vol. IX, No. 6, pp. 415) found that 80% of the cases of influenza from 22,084 troops epidemiologically investigated occurred among troops using mess kits. The men invariably used their hands as mops to clean kits. He states that the distribution of influenza in this manner is by indirect contact and chiefly by the hand to mouth route of travel. Our findings corroborate his experiments. There is also the possibility of infection by the aerial route.

It is easily seen that pneumonia, influenza, diphtheria and other throat and lung infections might readily be disseminated through the medium of the dirty and greasy plate. During a pandemic such as we have just experienced, it is reasonable to suppose that a certain per-

centage of the cases were contracted from the eating utensils. Less attention has been paid to this possible mode of dissemination than it deserves.

People working about restaurants should take special care to avoid contamination of hands or clothes. All dishes and eating utensils should be thoroughly cleaned in hot water made alkaline with strong soap. It is not sufficient merely to pass the greasy dishes through hot water. The alkalinity is an effective germicide. Strong soapy water will do a great deal towards killing and removing pathogenic organisms. The surfaces of all dishes should then be subjected to live steam for at least five minutes. It is absolutely necessary that each dish be subjected to this procedure. If the plates, etc., are stacked in piles the steam does not reach the entire surface. Mannheim and Yhavez (*Am. Jour. Pub. Health*, 1917, Vol. VII, pp. 614-618) suggest subjecting eating utensils to a temperature of 80° C. for one minute. We, however, think that the utensils should be subjected in a hot air oven to a temperature of at least 100° C., for 30 minutes.

The following suggestions seem pertinent.

(1) All dishes should be thoroughly scoured and washed and subjected to live steam at least five minutes and then dried in a hot oven.

(2) All dishes and utensils should be stacked in a covered oven or box and not in the open air.

(3) The floor should be washed down once a day and the fixtures at least once a week with a strong germicide. Lysol is probably as efficacious and as easy to use as any; its odor is objectionable to some people.

(4) The employees of restaurants should be examined by a health officer at regular intervals in order that carriers may be detected.

SUMMARY

(1) Hemolytic streptococci were iso-

lated from the "washed" dishes and tableware, in small restaurants and cafes.

(2) 6.35 percent of the articles examined yielded this organism.

(3) The strains of *Streptococcus*

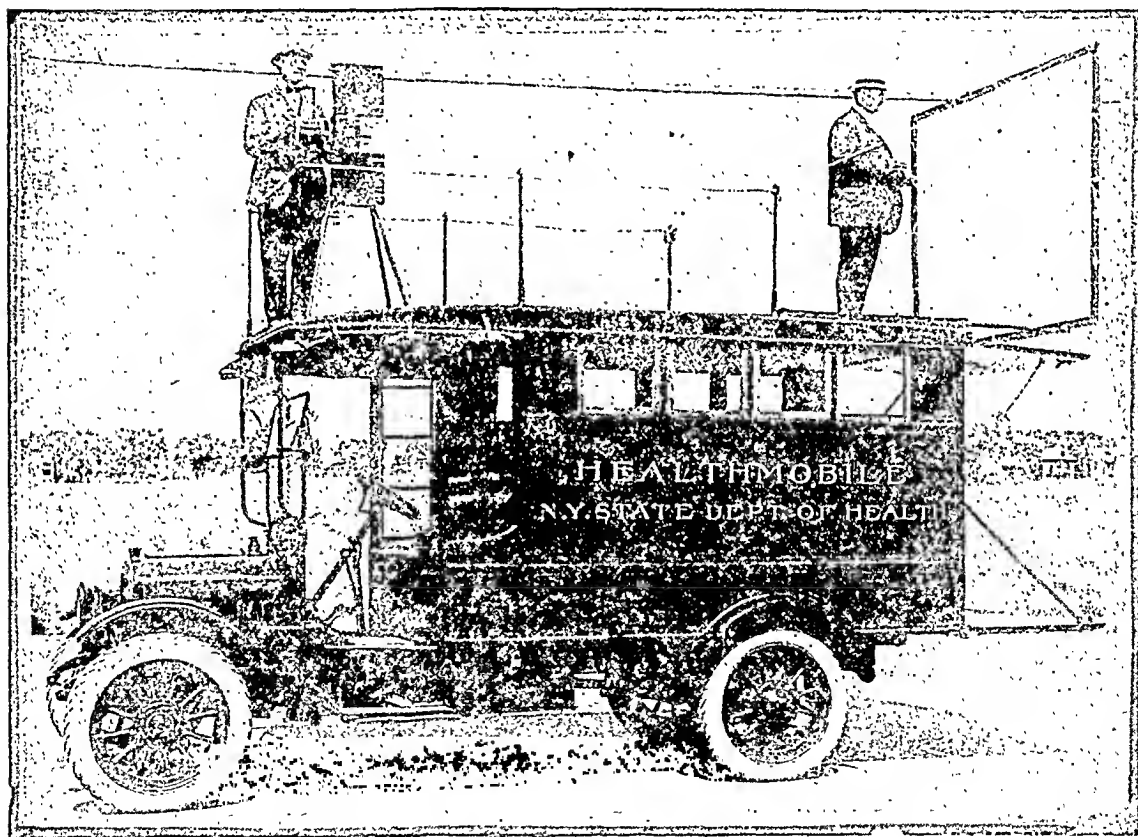
hemolyticus were virulent for rabbits. They correspond to the human type.

(4) For the protection of the public a better system of washing dishes is needed in the small eating place.



NEW YORK STATE HEALTH AUTO

The New York State Department of Health has recently purchased a model 16 G. M. C. truck for its work in public health education. It is called "Health on Wheels," and is carrying on an active campaign in disseminating good health propaganda in



various New York communities. A novel feature is its adaptation for out-of-door lantern exhibitions. A light frame is placed in position on the roof of the car on which slides or motion pictures may be thrown. This device does away with the necessity of setting up an outfit in each new place, either in the open air or in a hall. The health mobile is sure to be one of the most attractive features at the various county fairs, and its great radius of action will enable it to cover an exceedingly large field. The cut is presented through the courtesy of *Forbes*.

ON THE SOLUTION OF PNEUMOCOCCI BY BILE

F. B. KELLY,

John McCormick Institute for Infectious Diseases,
Chicago, Ill.

The lytic property of bile and its preparations with reference to pneumococci appears to be of uncertain quality. A variance seems to exist in the susceptibility of different strains of these organisms to lysis by bile. Inhibition of growth on blood agar is of value in determining lytic action.

BECAUSE of the variations in the solution of pneumococci by bile noted by recent workers* it seemed worth while to look with more detail into the subject of the bile-solubility of this organism.

Neufeld (*Ztschr. f. Hyg. U. Infektionskrankh.*, 1900, 34, p. 454.) was the first to describe this phenomenon. He accidentally noticed that on adding 0.1 cc. of rabbit bile to 2.0 cc. of a broth culture of a pneumococcus the mixture cleared up entirely. He found this to be true of the bile of other animals, including ox-bile; that the property was retained after autoclaving; that solution was retarded by cold; that the process could be observed under the microscope, where in a hanging drop the various stages of a gradual decrease in the number of size of the cocci could be seen; that the power was carried over in the alcohol-soluble, ether-insoluble portion of the bile, which contains the taurocholic and glycocholic salts; and most important of all, that the lytic action was limited to the pneumococci and *Streptococcus mucosus*.

Levy (*Virchow's Archiv*, 1907, 187, p. 327) used sodium taurocholate restored to a dilution of 10% with broth as a lytic agent, claiming pure bile to be too variable in viscosity, color, and power of solution. He found that 0.3 to 2.5 per

cent of the salt solution was required to dissolve various strains of pneumococci. He was the first to suggest bile solubility as a differential test of pneumococci and *Streptococcus mucosus* on the one hand, and hemolytic and green-producing Streptococci on the other, and emphasized it as superior to all other tests.

Mendelbaum (*Münch. Med. Wochenschr.*, 1907, 54, p. 1431) also used sodium taurocholate, 2.0 ccm. of a 10% solution in broth, with 2.0 ccm. of 24 hour cultures of pneumococci. He obtained clearing macroscopically with pneumococci and *Streptococcus mucosus*, whereas mixtures with streptococci retained a turbid appearance. He states that if after one hour a loopful of any of these mixtures was streaked on an agar plate the plate remained sterile. Under the microscope, by adding a little methylene blue to the hanging drop, he observed many involuted or degenerated forms otherwise invisible, showing the lysis to be incomplete even after 48 hours. Using oxbile, 0.5 ccm. with 2.0 ccm. of a broth culture, the mixtures became entirely clear, when pneumococci or *Streptococcus mucosus* were used. Microscopically, unstained, nothing could be seen; with methylene blue a few degenerated forms appeared, but even these were invisible after one hour. He therefore declares bile to be better than the sodium taurocholate, both because of its greater lytic strength, and also because he found that

*Nuzum, Jour. Am. Med. Ass'n., 1918, 71, p. 1562.
Keegan, Ibid., p. 1051.

Dunn, Ibid., p. 2128.

Howard, Bull. Johns Hopkins Hospital, 1919, 33, p. 13.

it could be kept better than a solution of the salt.

Neufeld (*Arb. Kaiserl. Gesndhtsante*, 1908, 28, p. 572) confirmed his earlier results and the value of the test in differentiation. He found there was complete lysis with all freshly grown and virulent strains of pneumococci and *Streptococcus mucosus*, but that their solubility was in a large measure lost after artificial growth for some time. It was regained by passing the organisms through animals. In trying to account for the specificity of the phenomenon he found it could not be due to the capsule, as some strains of pneumococci without capsules dissolved, whereas other capsule-bearing organisms were resistant.

Nicolle and Adil-Bey (*Ann. de l'Institut Pasteur*, 1907, 21, p. 20) noted that the presence of either sugar or serum inhibits the lytic action of bile. Libman and Rosenthal (*Trans. N. Y. Path. Soc.*, 1908, 8, p. 40) found that every organism they had classified as either pneumococcus or *Streptococcus mucosus* dissolved in bile. The solution was microscopically clear at the end of 20 minutes. They used oxbile, adding either one part of it to four parts of culture, or two parts to three of the culture. Neutral solutions gave best results. Acidity inhibited growth of the organisms. Transfers were made to blood agar plates after allowing the mixtures to stand at room temperature for varying lengths of time up to 24 hours, the streptococci being recovered in every case and the pneumococci and *Streptococcus mucosus* occasionally, showing that the lytic action was not always complete. They attributed Mendelbaum's failure to recover the streptococci to his use of plain agar instead of blood agar. Glucose solutions were found disadvantageous for diagnostic work because the results were variable.

Grixoni (*Riv. Critica Clin. Med.*, 1909, 10, p. 17) found a great variation in the lytic action according to the character

of the bile used. Rabbit bile was more active than ox bile, while fresh sterile bile acted more readily than old and contaminated bile. He claims the lytic power is lessened by sterilization, but retained if the bile is kept on ice. Both sodium glycocholate and taurocholate proved effective, the latter being the more active. Both, combined, each in a 2% solution were less powerful than fresh bile, though they were better than bile heated at 120° C. for one hour. He found, like Neufeld, that freshly isolated organisms dissolved in less time than was required for the organisms after they had been grown for some time on an artificial medium.

Cole (*Monographs Rockefeller Inst.*, 1917, 7, p. 13), and his coworkers declare the solvent substance for pneumococcus in bile is cholic acid. They specify the use of whole bile or of 10% solutions of either sodium glycocholate or taurocholate dissolved in salt solution as a routine test, employing one-fifth to one-tenth volumes of bile with actively growing broth cultures. They say that heat-killed organisms are insoluble. In testing several hundred strains of pneumococci they never failed to get solution. They incubate their bile mixtures at 37° C., in a water bath for one hour as a routine measure.

Aschner (*Jour. Ing. Dis.*, 1917, 21, p. 409) used a neutral, sugar-free broth containing 1% Witte's peptone and incubated till a sufficient growth of organisms was obtained. To this he added one-fifth volume of filtered sterile ox bile and obtained complete solution in 20 minutes with pneumococci. He notes the difficulty in getting a sufficient growth of these organisms in plain broth, and that sugars and serum added to enhance the growth retard lysis by bile.

In my work the organisms used at first were a strain each of the four types of pneumococcus, of *Streptococcus viridans*, of a hemolytic streptococcus, and of two untyped pneumococci which had been

found variable in bile-solubility. The ox bile was a mixture from a great number of animals, prepared, within a few hours after they were killed, according to the method of Cole and his co-workers and then kept on ice. All cultures used were 24 hours old. Plain broth cultures, 0.1% and 0.2% dextrose broth cultures, and suspensions in salt solution from blood agar slants were tried. The plain broth gave a very scant, scarcely noticeable growth with pneumococci; the 0.1% dextrose gave a slight growth; the 0.2% a good growth; while the salt suspensions could be made as dense as desired. In order to get greater uniformities in the cultures all were diluted to a definite opacity as determined by the visibility of a needle held against the opposite side of the tube. One part of bile was added to four parts of the culture or suspension. Two control tubes were used, the one containing one part of bile to four parts of the uninoculated clear medium; the other, one part of salt solution to four parts of culture or suspension.

The plain broth and the 0.1% dextrose broth cultures were both so clear that nothing could be told macroscopically concerning any changes in them. There was no apparent immediate change in the 0.2% dextrose broth or salt suspension. After incubation at 37° C. for 30 minutes there appeared to be a slight clearing up in both in the case of the pneumococci, but none with the streptococci. A 4 mm. loopful of each of the mixtures after their incubation, when put on blood agar plates gave no growths with three of the pneumococci strains from the plain broth-bile mixtures, with any of the six strains from the 0.2% dextrose broth-bile mixtures, and with four of them from the control tubes of the latter; while all the streptococci mixtures and the remaining pneumococci preparations produced colonies. The fact that so many of the controls from the 0.2% dextrose gave no growth, while all of the bile mixtures from the 0.1% dextrose did, shows

the failure of growth cannot be ascribed to the bile in the case of the bile mixture inoculations from the 0.2% dextrose broth.

No solution could be regularly obtained if the sugar was used to enhance the growth of the pneumococci. With salt suspensions from blood agar the bile mixtures became quite clear in 5 to 6 hours in the case of the pneumococci, and platings made at that time gave growths only occasionally from these tubes. Control tubes containing the organisms always gave a growth. The streptococci were always unchanged microscopically, and always gave growth when inoculated at the end of 6 hours.

Using salt suspensions only, different bile products were then compared with the bile in regard to their lytic effect. Two samples of sodium glycocholate, one of sodium taurocholate, one of desiccated bile, and four of inspissated bile were tried.

The bile, in a ratio of 1 to 4 to the suspension gave a clear solution with the pneumococci after 6 hours. Five of the six strains gave a growth when streaked on blood agar after 2 hours; one, even after 6 hours.

One sample of sodium glycocholate in a 10% solution showed no microscopic change after 6 hours, although there was absolutely no growths of the pneumococci on plates inoculated after 2 hours.

A second sample of the salt gave no clearness after 2 hours, although two of the organisms gave no growths when plated at that time. When two parts of the solution was added to three parts of the suspensions the mixtures became clear within 5 minutes but gave a plate growth with three of the strains even at the end of two hours.

When two parts of a 10% solution of sodium taurocholate were added to three parts of the suspensions, there was macroscopic solution within 5 minutes, but two of the strains gave a growth on blood agar even after two hours.

The desiccated bile, in a 10% solution and in the ratio of one to four to the suspensions, made but slight change in the appearance of the mixtures, and gave growths on plates with all the strains of the pneumococci even after two hours. In the ratio of two to three it gave distinct clearness in five minutes and four of the strains gave no growths on plates inoculated at the end of 20 minutes. Within two hours all of the mixtures were decidedly turbid again.

Ten per cent solutions of the four samples of inspissated bile (Parke, Davis & Co.) in the ratio of one volume to four volumes of the suspensions gave absolute clearness in the case of the pneumococci in five minutes. With the first sample no growths on blood agar could be obtained after the end of 20 minutes. With the second sample two of the strains gave growths even at the end of one hour; with the third sample, all six gave growths at the end of one hour; and with the fourth sample, no growths occurred when plated after one hour. When two parts of the bile solutions were added to three parts of the suspensions, only one strain when mixed with the second sample gave a growth after one hour; only three strains when mixed with the third sample gave growths at this time.

In no case did the bile products affect the appearance of the streptococci, or prevent their giving growths when streaked on blood agar.

Using the last three samples of inspissated bile, their effect on the following organisms was observed, the previous strains being tested at the same time as controls:

- 4 strains of type I pneumococcus
- 4 strains of type II pneumococcus
- 3 strains of type III pneumococcus
- 10 strains of type IV pneumococcus
- 15 strains of untyped pneumococcus
- 21 strains of streptococi

The 10% solutions of inspissated bile were added in the ratio of two to three of the suspensions. Of the 36 strains of pneumococci, 27 gave a perfectly clear

solution within 5 minutes with all three samples of bile. Of the remaining 9 strains, 4 had been of variable solubility before, while the rest had required $3\frac{1}{2}$ to 24 hours to dissolve. Now they showed variations in solubility both as compared with each other, using the same bile, and also each with itself using the different biles. Loopfuls from each were inoculated on blood agar after 2 hours. Growths appeared from mixtures with sample 2 with 22 strains, with sample 3 with 31 strains, while with sample 4 no strain gave a growth. The streptococci showed no change microscopically with any of the biles. In only one case did no growth result when the mixtures containing streptococci were inoculated onto the plates.

In reading the tubes, if they were held in front of a dark object, such as a book, there was always present a slight opacity, greaselike in appearance, even when the bile was added to clear salt solution. This disappeared if the tubes were held so that a clear sky formed the background. The brightness under this condition was often sufficient to penetrate and make a fairly opaque mixture appear as clear. The most dependable results were obtained by using an object such as a building some distance away from the window as a background. With all the various mixtures used, the coloring matter in the bile was a confusing element, making it somewhat uncertain at times what changes had occurred.

CONCLUSIONS.

The presence of sugar has an inhibiting action on the lytic property of bile on pneumococci. Suspensions in salt solution offer a good means of testing the organisms; first, because the concentration can be controlled; second, because they give colorless suspensions; and third, because they eliminate many extraneous factors. While some samples of bile give good results, not all have strong lytic action; and the various bile preparations also differ in their power.

Inspissated bile seems stronger than other products but even different samples of this vary in their strength. Apparently there is a variance in the susceptibility of different strains of pneumococci to lysis by bile. If a coccus dissolves it is undoubtedly a pneumococcus; but if a solution is only partial, this fact does not necessarily rule out the possibility of the

strain belonging to this group. If growth on blood agar does not occur when it is inoculated from a suspension mixed with bile for a few minutes, provided the suspension alone does give a growth, the organism may be considered definitely a pneumococcus; but the organism may be a pneumococcus even if it does give a growth after mixing it with bile.



CITY HEALTH BULLETINS: THEIR USE AND MISUSE, THE NECESSITY FOR ADDITIONAL MAILING PRIVILEGES

MAX J. COLTON,
Health Officer,
Cumberland, Md.

Presented before Section of Public Health Administration, at New Orleans, La., October 29, 1919.

Pound rate postage for city health bulletins is the plea of this author, a city health officer. Bulletins can take up public health education in most valuable ways, notably venereal disease and patent medicine discussion, which newspapers can hardly touch. Pound rates would demand change in postal laws by Act of Congress.

AN essential factor in the improvement of the public health is the education of the people in health matters. They must be taught how to live healthy, how the spread of communicable diseases can be diminished, and the need for a sanitary and healthy community. There is no doubt that an expenditure on education will be amply repaid by a saving of lives and prevention of disease. The old maxim that "an ounce of prevention is worth a pound of cure" is never more realized than in public health. Education can be furnished through health bulletins, issued periodically and distributed to those fitted to receive them.

The value of any publication lies in its composition and distribution. This is especially applicable to health bulletins, because we are dealing with a subject

that must be continually kept before the public, otherwise people grow very indifferent to public health matters. The need is, therefore, apparent, and the demand is at hand for properly written and judiciously distributed health bulletins.

There are excellent reasons why city departments of health should issue bulletins. The campaign of education should not be left wholly to local daily newspapers. Health bulletins, however, do not supplant newspapers but instead one is needed to support the other in the campaign for better health. The citizens of a community should be educated about many subjects, information concerning which newspapers will not print. Probably the two most prominent of these matters are venereal diseases and patent medicines. There should be a frank discussion on the venereal disease problem

and the menace of quacks and patent medicines. Of the first mentioned, many newspapers still insist on calling them "social diseases" instead of plainly printing gonorrhea and syphilis, and about the latter, advertising secured from patent medicine concerns and quacks is too profitable for most newspapers to take chances of losing that money, by publishing the real truth concerning such matters.

Practically every profession and industry has its own journals, and many manufacturing and mercantile establishments issue what they call "house organs," in which they endeavor to inform their clients regarding all matters, but more especially featuring their own line of business. Health departments are no less public institutions than mercantile establishments, and they should stand ever ready to sell public health provided they can find the buyers. It therefore behooves the officials in charge to use all legitimate means of creating a demand and there exists no better way than through a health bulletin where the real truth and only the truth should be set forth, unvarnished and not written to suit the particular taste of any newspaper, faction, party or interest.

The complaint has been made regarding city health bulletins that they do not reach the class of people who most need the instruction and advice contained in them. That may all be true, but health bulletins to people of that kind are incomprehensible and even though a copy of each issue could be placed in their hands, the time, energy and money would be wasted. They can be instructed only by word of mouth and actual demonstration. The people for whom health bulletins are valuable are the better class, who can read, and know what they are reading (providing, of course, the material is properly prepared). It is to the citizens of this type that the appeal must be made for a more solid support of the health department, and to whom a dis-

cussion concerning the activities and proposed activities of the health department must be addressed.

In view of these facts and others not set forth, the need for city health bulletins is established, as evidenced by the publications issued by many of our large cities and numerous smaller ones. Unfortunately many of the publications issued are not worthy of the name "health bulletins," but instead are merely statistical reviews put up in a fashion all their own and oftentimes in a manner easily misinterpreted. The information contained in these statistical reviews may be merely the number of inspections, examinations, condemnations, etc., made by the various employees of the department and the number and causes of deaths. It is fair to assume that these tables are not read to any extent and the information contained therein is of no material benefit to the citizens of the community.

Information solicited from approximately fifty health departments that issue health bulletins shows a large expenditure of money both for printing and distributing. In many of the cities, as evidenced by the bulletins issued, the money expended for this purpose could be put to far better use through the publication of two or three popularly and properly prepared leaflets for distribution from house to house.

Perhaps a few illustrations of publications issued by health departments under the term "health bulletins," and supposedly for the benefit of a community, would not be out of place here.

Several cities issue a four-page review each month, in pamphlet form, of cumbersome size, setting forth nothing but statistics. In a few of these even an itemized statement as to the cemeteries where bodies were buried is given. A number of cities issue similar monthly statistical reviews, and include a full list of the Board of Health and all employees. Some bulletins are issued with blank pages. It would be far better, if the

time and facilities were not at hand to prepare an article, to at least print a few terse statements which would be a lesson in themselves. Another defect is the issuing of the publication some months later than the time carried on the date line.

There are, of course, many excellent health bulletins, among which may be mentioned those issued by the health departments of Detroit, Cincinnati, Philadelphia, Chicago, St. Louis, New York, and a few among the smaller cities.

Bulletins to be of value to their readers, must be prepared in a live fashion, the material up-to-date, written in a clear, concise manner, set up in legible type, and containing information that is of benefit to the readers, and that can easily be digested by the average person. It should have a regular date of appearance and current material should be used. Furthermore, exaggeration should not be resorted to; only the truth should be set forth. The reading matter should be of a practical instead of a theoretical nature and the articles should not be lengthy. One main purpose of publishing bulletins is to secure the confidence and support of the citizens to whom the particular health department caters, and this can only be obtained by a plain statement of the facts and a frank discussion. Even though the bulletin be published mainly for physicians (which it should not be) the articles should be clear and concise, interspersed with pithy expressions, so that by spending a few minutes the gist of the matter can be obtained. An additional attraction in health bulletins is the publication of self-explanatory pictures or cartoons portraying existing conditions.

My main plea at this time is to stop wasting money on publications which cannot possibly do good in the community.

The need for more liberal mailing privileges for health bulletins issued by municipal health departments has been apparent for some time, and a number of members of this Association have had the matter under consideration. The gist of the proposition is this: Under the Federal postal laws and regulations, health bulletins issued by state departments of health are admissible for mailing at pound rates. This privilege does not embrace municipal health bulletins. The reasons for this condition is that postal regulations do not permit the mailing at pound rates of a publication that has to be distributed by the carriers at the same post office where the publication is mailed. This regulation was made in order to prevent daily newspapers from using the local post office as their distributing agents.

The point is, of course, well taken for newspapers, but there should be no reason why a health bulletin, issued for the benefit of all people and from which no profits are derived, should not be allowed to be distributed as cheaply as possible. Furthermore, under the pound rate privilege a health department can publish three or four times as many copies of the bulletin as under the present system, at no greater expense. This is mainly why pound rate privileges should be extended to include city health bulletins.

A change in the postal laws could afford the advantages of pound rates to municipal health bulletins, but such change would be only by Act of Congress. Should Congress be induced to make the necessary changes in the law, the benefits to be derived by municipalities all over the country which are at present issuing health bulletins are numerous, but mainly it will ensure the reaching of a large part of the population with that most essential feature of public health administration, popular health education.

IDEALS IN THE ORGANIZATION OF AN INDUSTRIAL MEDICAL SERVICE

EMERY R. HAYHURST, Ph. D., M. D.

*Professor of Hygiene, Ohio State University,
Columbus, Ohio.*

A COMMON observation in regard to industrial medical services as installed in various establishments is the fact that so many of them are one-sided, that is, are promoted and managed almost entirely by the employer. It is well known that organized labor has shown antipathy to welfare work in general, including even medical and health phases thereof. It is also plain to be seen that coöperation between employers and employes is essential for the success of this service.

One serious factor appears to be the fact that there is no established procedure for taking care of workers who, through physical examinations and other forms of inquiry, are found to be misplaced in their employment relations and who are very apt to suffer if any changes are made. It would appear that there are one or two solutions for this situation; for instance, the institution of compulsory health and disability insurance or the adoption of group insurance to cover the health and disability of the workers in a given establishment.

Industrial medical service cannot achieve its ideals until an inventory is made of each worker's capabilities and until he is placed in accordance with the findings of the inventory. Refinements are not necessary; rough groupings ought to suffice. A great extension of possibilities in placing him intelligently can be had through an analysis of the jobs at hand, including the checking up of their health-hazards. A reduction of these hazards naturally extends the field placements.

An industrial medical service is not complete which devotes itself almost ex-

clusively to reconstruction and palliative measures. It must give much attention to such preventive measures as industrial hygiene and housing hygiene as well as physical examinations.

Hence, it appears that the medical department of an establishment should be managed by a committee representative of both employer and employes and with at least one official representative of the local board of health. The make-up of this committee should be such that proportionate representation is had with the further provision that in case of a divided opinion either the local health representative should have a deciding vote or, if of sufficient importance, a higher committee should have such jurisdiction, such, for instance, as one composed of a representative of each of the following: The local or state manufacturer's association, workmen's organization, the chamber of commerce and the state department of health.

The cost of an industrial medical service should also be divided. It is not good moral practice to bestow service free of charge where those being served have some personal responsibilities. The industry may justly pay for the equipment necessary, considering it a part of the plant, but maintenance should be charged partly to employes, and partly to the direct cost of production. It is obvious that an industrial medical service cannot be all capitalistic in either management or maintenance and be certain of more than the passing interest or lukewarm coöperation of those being served, yet from the nature of industrial relations capital must be the natural leader in its management as in other features of business.

ORGANIZATION OF CONTROL OF PASTEURIZATION

FREDERICK O. TONNEY, M. D.

*Director of Laboratories, Chicago Health Department,
Chicago, Ill.*

Read before Joint Session of Section on Public Health Administration with Laboratory and Food and Drugs Sections, American Public Health Association, at New Orleans, La., October 29, 1919.

THE experience of the Chicago Department of Health in the enforcement of a comprehensive pasteurizing ordinance during the past seven years has presented an excellent opportunity for the study of methods of control. It has been possible during a long continued period of observation to test out the various control procedures and judge their efficiency by the ultimate results accomplished. The outcome of this period of experimentation has been the adoption of a general scheme of organization and the development of a standardized plan of procedure which now appear to be of proved value. The methods herein outlined, therefore, may be said to have been found effective as applied to the control of a milk supply of 215,000 gallons daily* derived from 18,000 farms, pasteurized in 456 pasteurizing plants and distributed through 603 milk depots. Ninety-eight per cent of the milk supply of the city of Chicago is now pasteurized. The remaining two per cent represents the amount of certified milk distributed in this market.

The control of pasteurization is basically a bacteriological problem. The effectiveness of such control will depend in last analysis upon the extent to which sound bacteriological principles are applied in its solution. Success is conditioned, therefore, upon the close coordination of the inspection division with the public health laboratory. Efficient laboratory service is required not only for the examination of routine samples but for the education of the inspecting personnel, and for the guidance of scientific matters

of those responsible for the direction and planning of the work.

ORGANIZATION OF FORCE

The inspection force proper will be considered in three general groups: the milk inspector, representing the rank and file of inspector; the field plater, who is selected for work requiring a certain amount of technical skill; and the bacteriologist, who is required to repeat and confirm the work of the other groups in selected instances.

The Milk Inspector.—The milk inspector, or rank and file of inspector, engages exclusively in field work. His duties include general inspection of depots, plants, and wagons, scoring of plants, and collection of routine samples. Many of these men necessarily have little or no technical training. They cannot be expected, therefore, to master fully the bacteriological technique of sampling. They should be assigned to the laboratory for a two-weeks' course of instruction before taking up their duties and should also receive instruction in field work at the hands of some member of the inspecting force. Such bacteriological work as is participated in by them must necessarily be accepted with reservation and subject to confirmation by more fully trained technicians. The number of such inspectors employed should be about one to each 25 pasteurizing plants, if we allow for other duties such as depot and wagon inspection.

The Field Plater.—Among the rank and file of field men there will always be found certain ones who possess aptitude for laboratory work by reason of preliminary education or natural technical ability. Such men are selected

*As of the year 1918.

after a period of observation and are given a six weeks' course in the Bureau of Laboratories where they are instructed in bacteriological plating methods and are specially trained in the technic of using the field plating outfit.¹ These inspectors may be regarded as intermediate from the standpoint of technical training between the milk inspector and the bacteriologist proper. Their duties include both field work and laboratory work and their time is chiefly spent in passing upon new installations and inspecting plants which are more or less unsatisfactory. The number of field platers is about one-third that of the milk inspectors.

The Bacteriologist—The bacteriologist is a member of the laboratory force, specially trained in milk bacteriology, who is detailed by the laboratory from time to time to the inspection division. His findings are used for final confirmation of the results of tests by inspectors and for preparation of cases for suit in court. One such bacteriologist is usually sufficient for a given health department organization.

The Supervising Inspector.—There should be one supervising inspector to each 25 inspectors, approximately. He is assigned to a supervisory district and is held responsible for the apportionment of work to inspectors, the reviewing of reports, and the checking of assignments. He reports directly to the division chief or person acting in the capacity of division chief. An office force is required to file reports, check thermo recorder charts, send out notices, report results of tests, and attend to miscellaneous correspondence.

PLAN OF PROCEDURE

Initial Installation of Pasteurizing Plants.—The initial installation of a pasteurizing plant gives occasion for the application of four general control measures: (1) approval of the plan of

construction and site of building; (2) inspection and scoring of the establishment after completion; (3) testing of the heating device, holding device, sterilizing facilities, and thermo recorder; (4) issuance of a license or permit under which the plant may legally operate.

The construction of a new plant or remodeling of an old one offers an opportunity for plan approval whereby errors in construction and sanitary arrangement may be avoided or corrected with a minimum of expense to all concerned. An expert plan examiner should be assigned to this work, and previously approved plans may be furnished for guidance in construction. The plans should be laid down with certain fundamental principles in mind such as:

(1) Convenience in arrangement facilitates the use of proper bacteriological methods.

(2) Smooth surfaced impervious materials are most readily kept clean.

(3) All pipes and apparatus should be arranged so as to be easily accessible for cleaning.

(4) Long runs of piping for carrying milk should be avoided because of their tendency to accumulate filth favorable to bacterial growth.

(5) When possible the sterilizer capacity should be sufficient to permit the treating of all utensils at one time as a last step in the daily routine, after the cleaning of equipment and premises is finished.

(6) Living quarters, locker facilities, and toilets must be separate from the rooms in which milk is handled.

(7) Adequate light and ventilation are prime essentials.

Inspection and Scoring.—Inspection and scoring of the completed plant is ordinarily carried out by the milk inspector. For this purpose a score card is provided for depots and pasteurizers. Plants should score at least 75%

¹ Tonney & White—A Field Plating Outfit, etc. A. J. P. H., Vol. VIII, No. 8, p. 582.

before approval for operation is given. The inspector makes a detailed record of necessary structural changes and sanitary improvements and records a recommendation for approval or disapproval of the plant. Such orders and recommendations are transmitted to the supervising inspector for review and confirmation and are thereupon passed to the chief or assistant chief executive of the division for final disposition. Approved orders are then mailed to the plant or license proceeded with as the case may be.

Testing of Apparatus.—The testing of the heating and holding apparatus is commonly carried out by the field plater. He tests the temperature with a standardized thermometer, times the holder, and takes samples of milk at various steps in the process, using his field plating outfit. The plates are taken to the laboratory for incubation and are counted by the same inspector after the incubation period. If the equipment is thereby shown to be capable of giving satisfactory results, a recommendation for its approval is recorded by the inspector and transmitted to the inspection division. If not, the bacteriologist proper is assigned to confirm the findings of the inspector. His recommendations must be complied with and compliance verified by subsequent inspection and tests before license is issued.

The testing of the holding device when the milk is held "in batch" consists ordinarily of recording the time interval, and taking the temperature at the beginning and end of the heating period, using a standardized thermometer. In the case of continuous flow holders the methylene blue test is applied, the time being taken at the outset and again at the first appearance of the dye at the outlet of the machine. Many continuous flow machines have been discarded because of their inability to pass this test. The inspector also

tests the recording thermometer by placing the thermometer of the instrument in a pail of hot water, varying the temperature by addition of cold or hot water, and checking the recorded temperature with his standardized thermometer.

License.—When a satisfactory record is obtained with respect to the previously prescribed tests license is approved. For plants within the jurisdiction of the municipality a double license is recommended, i. e.,

(1) A general license issued by the mayor or chief executive for a fee, authorizing the sale of milk; and (2) a permit issued by the commission of health without fee for the operation of a pasteurizing plant. For plants located outside the municipal jurisdiction a permit only is issued. Both license and permit have a tenure of one year and are revocable for just cause by the issuing authority.

GENERAL CONTROL OF CITY PLANTS

For convenience in discussing city plant control the subject matter will be treated under the following headings: (1) Inspection and seoring. (2) The hearing board. (3) Reporting of contagious diseases. (4) Sampling. (5) Court process. (6) Revocation of license.

Inspection and Seoring.—A routine inspection and seoring should be made of each plant by the milk inspector once in two weeks on an average. Unsatisfactory plants should receive attention more frequently, whereas plants known to be conducted satisfactorily may be seen at longer intervals. The seore is made upon the regular card. A seore of at least 75% is required. The inspector records orders for the abatement of insanitary conditions or the correction of unsatisfactory methods. These orders are turned in to the supervisor for review and transmitted to the office for issuance, a time limit for compliance being set in the

order. A reinspection is made after the expiration of the time limit and in case of non-compliance the dealer is summoned to appear before the hearing board.

The Hearing Board.—The hearing board, which consists of representatives of the health department and legal department of the city government, is convened at regular intervals for the purpose of allowing violators of sanitary ordinances a preliminary hearing and making reasonable adjustments without resort to court procedure. At the hearing a further time extension may be allowed, or, in the discretion of the board, the case may be recommended for suit. The hearing board which was established in Chicago in 1915 by Dr. John Dill Robertson has adjusted many thousands of cases, thus securing early compliance without the costly and time-consuming court process. The number of cases heard by the hearing board, including food and sanitary cases other than milk, is 24,583 and the number of cases recommended for suit is 7,843.*

Reporting of Contagious Diseases. Under the terms of the Chicago ordinance, milk dealers are required to report to the health department the existence of any contagion developing among their working force or their families. In practice, however, it becomes necessary to rely chiefly on other sources for this information. Within the municipality the official reports of physicians to the health department, the laboratory findings on specimens submitted for diagnosis, and information obtained by quarantine officers and food inspectors constitute the main sources of information. With regard to major contagious diseases, routine tabulation of the milk supply is made from the reports of physicians and quarantine officers and when an excessive number of cases ap-

pears chargeable to a given dealer a special investigation is made with the object of discovering contagion in or about the establishment.

When persons infected with contagious disease or who are carriers of disease are found they must be excluded from work in connection with the pasteurizing plant or its distributing agencies. When contagion exists in the family of a worker he may be permitted to continue work if he establishes living quarters away from the infected premises. When contagion exists on the premises where pasteurizing is done, continuance of business may be permitted provided that the milk is taken to another plant for pasteurization and all work done by persons who have not been exposed to contagion. When evidence of the existence of an unknown infecting focus appears in connection with a pasteurizing plant, the establishment is shut down pending investigation of the source of infection.

The Thermo Recorder.—The thermo recorder chart, taken in conjunction with routine inspection, may be accepted as evidence of the proper operation of the heating apparatus and holding device. When practicable, the charts should be collected by the inspector but may if necessary be nailed to the inspection bureau. On receipt at the Central office, they are checked up by an inspector who should be an experienced field man preferably familiar with the general layout of the plants whose records pass under his scrutiny. When deviations are found in the temperature records, the attention of the field force is directed to the plant and in the case of recurrence, a shut-down of the plant may be necessary.

Sampling.—Bacteriological sampling of milk for control purposes falls into three principal groups: (1) primary routine sampling by the milk inspector; (2) secondary "follow-up" sam-

* As of Jan. 1, 1919.

pling by the field plater and (3) final sampling by the bacteriologist.

The primary routine samples constitute the largest group of samples collected. They are taken by the rank and file of milk inspector. In Chicago from 50 to 75 such samples are collected daily from milk depots, stores, wagons, and receiving platforms. The results serve to indicate in a general way the plants which are in need of closer attention. These findings, however, because of the long interval between collection and examination of the sample and because of the limitation of the average inspector's technic must be accepted with reservation. They should be considered as confidential information for use of the department only and should not be given out to dealers or used as a basis for suit or revocation of license. In the laboratory the simplest possible technic is used, with the idea of examining as large a number of samples as possible. To this end, two dilutions only are plated from each sample. The actual count of the colonies, therefore, often falls above or below the limits of the dilution, making estimation necessary in lieu of counting. We have attempted to simplify further the laboratory technic of primary sampling by trying out the Breed method of direct examination of milk.¹ It was found, however, that the method is not adapted to milk of the age at which it commonly reaches the city and is especially unsatisfactory as applied to pasteurized milk. Its disadvantage lies in the fact that dead organisms apparently take the stain and cannot be distinguished from the living. The result is that the direct count shows enormously greater numbers of bacteria than the plate method required by the ordinance. In fact, in such milk as we have had to examine there is apparently no relation between the results of the two methods of counting.

For this reason, we have found it necessary to abandon the direct method as unsuitable for control purposes under the conditions encountered. Table No. 1 indicates the discrepancies observed between the direct count and the count by plating.

TABLE NO. 1
SHOWING NUMERIC RELATION OF BACTERIA
FOUND IN MILK BY DIRECT MICRO-
SCOPIC METHOD AND BY
PLATE METHOD

Laboratory Number	Direct Method	Plate Method	Ratio Direct to Plate Count
200	41,500,000	2,000,000	22 to 1
197	13,500,000	400,000	33 to 1
318	10,000,000	50,000	20 to 1
109	467,500,000	500,000	584 to 1
662	38,000,000	150,000	253 to 1
198	51,500,000	90,000	572 to 1
317	32,000,000	100,000	320 to 1
742	47,600,000	750,000	63 to 1
756	79,000,000	500,000	158 to 1
315	20,500,000	50,000	230 to 1
263	113,500,000	500,000	227 to 1
265	8,000,000	65,000	123 to 1
266	35,500,000	1,000,000	35 to 1
262	8,000,000	350,000	23 to 1
653	4,500,000	80,000	56 to 1
319	2,500,000	45,000	55 to 1
388	276,500,000	250,000	1106 to 1
386	25,000,000	1,000	25000 to 1
385	12,500,000	550,000	14 to 1
384	4,000,000	200,000	20 to 1
345	72,000,000	4,000,000	18 to 1

Secondary "follow-up" Sampling.—

The secondary sampling is carried out by the field plater who is assigned to those plants which are indicated by the primary sampling to be in an unsatisfactory state. The number of such samples examined in Chicago is about twenty per day. The purpose of the secondary sampling is to locate the sources of contamination and to give instruction to the dealer in the proper methods of operation. The inspector remains at the plant during the entire process, observing methods, inspecting equipment, and sampling at each step. He plates his samples on the premises using the field plating outfit, thereby demonstrating the elementary principles of bacteriological technic for the benefit of the plant workers. The plates are brought to the laboratory and after incubation are counted by the same inspector. Later he returns to the plant for the purpose of eradicating the sources of contamination indicated by the results found. The results of secondary sampling may be considered more reliable than those of the primary

1. N. Y. State Jour. of Med. Vol. 19, No. 4, p. 134.

sampling and may be reported to the dealer. They are not, however, sufficiently dependable for court purposes. It has been found that the majority of unsatisfactory plants may be successfully handled by the field platens. The few remaining intractable ones are referred to the bacteriologist for confirmatory sampling, the results of which are used as a basis for court proceeding.

Final Confirmatory Sampling.—The final confirmatory sampling is carried out by the bacteriologist assigned from the laboratory. He confines his attention to persistently unsatisfactory plants which have resisted all previous efforts of correction. The technic of these tests is quite elaborate and all of the technical details specified in the ordinance are painstakingly carried out. Every possible precaution is used to safeguard against error. The samples are taken in the final containers only, delivered iced to the laboratory within one hour, plated immediately in a range of five dilutions in duplicate, incubated for a timed period of forty-eight hours and accurately counted. Controls are run with all tests, the pipettes are calibrated and the amount of culture medium used in each plate is measured. The results will therefore stand the test of cross-examination by experts. On account of the amount of work involved in this test the number of such samples should be limited to about four daily if one bacteriologist is employed. It should be noted that the results obtained by this strict technic are commonly much lower than the previous results obtained in the same plants by the inspecting personnel. Table No. II shows the comparative results of primary sampling by the milk inspector and final sampling by the bacteriologist. The table has been abbreviated in the interests of economy of space.

TABLE NO. II
RESULTS OF PRIMARY ROUTINE SAMPLING
AND FINAL COURT SAMPLING
COMPARED

	Date	Rout. Samples	Date	Final court samples
Plant A	4-18-10	450,000	5-21-10	50,000
	1-22-10	60,000		
	6-14-18	Too numerous to count		
Plant B	4-28-10	200,000	5-21-10	400,000
	4- 9-19	650,000		
	5-20-19	450,000		
Plant C	4- 2-10	200,000	5-21-19	25,000
	10- 2-18	100,000		
	9-10-18	70,000		
Plant D	4-18-10	400,000	5-22-10	400,000
	12-17-19	380,000		
	4-22-10	300,000,000		
Plant E	12-19-18	350,000	5-22-19	5,000
	12-10-18	100,000		
	4-23-19	200,000		
Plant F	3-28-10	40,000	5-22-10	120,000
	4-22-10	200,000		
	3-22-18	50,000		
Plant G	4-22-10	5,000,000	5-22-10	150,000
	4-22-10	4,000,000		
	12-10-18	Too numerous		
Plant H	4-21-19	200,000	5-23-10	100,000
	1- 7-19	Too numerous		
	1- 7-10	40,000		
Plant I	4-21-19	200,000	5-23-10	25,000
	1- 7-19	Too numerous		
	1- 7-10	40,000		

Court Process.—The number of instances in which court process must be resorted to under the plan outlined is small, since other means are previously exhausted and only persistent violators resistant to other measures reach this stage in the program. About 30 suits for high bacterial counts have been brought to trial in Chicago during the two years passed. While the rule is that the ordinance is commonly upheld, it must be admitted frankly that the court process, as a control measure, is not entirely satisfactory. The procedure is time consuming and costly in effort. There are many loop-holes of escape before the case is finally disposed of in court. The fines imposed also are frequently too small to be effective. The method, however, as a whole, is of distinct value, as the knowledge that suits are being brought has a corrective effect upon the industry.

Revocation of License.—A more satisfactory method of dealing with old offenders which has recently been used extensively with good effect by the Commissioner of Health of Chicago is the revocation of licenses. By this method pasteurizing plants which have long been unsatisfactory are suddenly confronted with summary interruption

of business. The doors are padlocked and a police detail is stationed on the premises. The result is the display of remarkable alacrity in carrying out orders for the improvement of sanitary conditions. Repairs which have been pending for months are accomplished over night. Old nuisances are abated, flies are kept out of the premises, the methods of operation are improved and bacterial counts in the product which have been persistently above the legal standard suddenly drop to a satisfactory level. In fact, the prompt response and resulting necessity of early renewal of license has lately led the Commissioner of Health to adopt the practice of serving a 24 hour notice before revocation. It is found that this notice often obviates the necessity of revocation because of prompt compliance with regulations. It should be borne in mind further that the results cited are accomplished with a minimum of effort and in record breaking time.

The annual renewal of licenses also constitutes an effective means of enforcing sanitary requirements. It is the practice to secure an inspection and scoring of all premises shortly before the expiration of the license period. Plants found to be below standard are not given renewals until conditions are made satisfactory.

CONTROL OF COUNTRY PLANTS

The methods of control of pasteurization, as used within the city, require some modification when applied to plants located outside the boundaries of a municipality.

Inspection and Scoring.—A dairy inspector or creamery inspector is required to visit country plants at least once each month. The number of such inspectors should be about one to each 15 plants, approximately, if time is allowed for dairy duties and other assignments. The card used for scoring is similar to that used within the city.

A score of at least 75% should be required. Orders for abatement are forwarded to the department for issuance as in the case of city plants.

Reporting of Contagious Diseases.—Information with reference to contagion among employes of country plants or their tributary farms is obtained in a number of ways. The dealers themselves report a considerable number of cases. The dairy inspectors, the creamery inspectors, the local health officers, and physicians are important sources of information. Rarely the farmer himself reports the existence of contagion. A report of two or more cases in a given locality is followed by investigation in the neighborhood which often discloses additional cases in adjoining farms and nearby plants. Diseases in the herds are commonly reported by the local veterinarians. When a report is received of the existence of contagion in a pasteurizing plant or its tributary farms, the product of the plant is excluded from the market until such time as the case is removed from the premises or the tributary supply is cut off. The return to work of the employee concerned is not permitted until a formal certificate of recovery is obtained from the local health officer. In the case of tributary farms, the shipment of milk to the plant may be allowed if the herds are removed to other premises and cared for by persons not in any way exposed to contagion.

Thermo Recorders.—Thermo recorders are required as in city plants. The charts are required to be mailed regularly to the department of health.

Sampling.—Sampling consists chiefly of field plating at the plants and general primary sampling on arrival of the product in the city.

The "Shut-off."—Perhaps the most effective means of control of plants located outside of the municipal jurisdiction is the "shut-off." This procedure

may be regarded as a temporary suspension of the permit to operate a pasteurizing plant. It is resorted to for reasons such as the following:

1. Non-compliance with orders for abatement of insanitary conditions.
2. Acceptance of milk from other shippers who have attempted to evade a "shut-off."
3. Failure to send thermo recorder charts to the department.
4. Falsifying thermo recorder charts.
5. Failure in the case of a new plant to apply for a permit before shipment.
6. High temperature of milk at the receiving platform in the city.

77. Excessive bacterial content of the milk sampled at the receiving platform.

The "shut-off" is accomplished in the following steps: (1) Written notice is sent to the consignor and consignee; (2) Telephone notice is given to the dairy inspector of the district; the inspector ascertains whether the plant is shipping and reports by telephone to the department, giving the railroad

and time of arrival; (3) A milk inspector is assigned to the receiving platform in the city. On the arrival of the shipment, it is returned to the consignor by the milk inspector or held under condemnation tag. The shipper, in order to be relieved of the "shut-off," is required to come to the city or send a representative to interview the executive or assistant executive of the inspection bureau. Here the reasons for the "shut-off" are fully explained and the importance of securing compliance with orders emphasized. When all orders have been complied with and this fact has been verified by inspection of the plant, the "shut-off" is lifted.

Revocation of Permit.—Revocation of permit or refusal to renew the permit at the end of the expiration period is at times resorted to as a means of penalizing repeated disregard of sanitary regulations. This step closes the city market to the plant in question and usually results in prompt compliance with orders issued for abatement of insanitary conditions and improvement of methods.



Marriage and Disease.—The new Danish Marriage Law is up for its third reading in the Folketing (Lower House) after which it will go to the Landsting (Upper House) for consideration. It contains these provisions:

(1). If the person who wishes to contract a marriage does not suffer and has never suffered from venereal disease, he shall give a written declaration on his honor to that effect.

(2) In the opposite case, he must either put in a doctor's certificate, made within the previous fortnight that the danger of infection or its transmission to the children is most improbable; or

(3) If such a declaration cannot be made, he must prove that the other party to the marriage has been informed as to the disease, and that both parties have had oral instruction

from a doctor as to the dangers consequent thereon.

Typhus on Decrease in Esthonia.—Mortality from typhus in the hospitals of Esthonia is on the decrease, according to announcement made by Colonel Edward W. Ryan, head of the American Red Cross Commission to West Russia. From 8 percent to 0.5 percent is the record drop in the number of deaths from typhus registered in five days in some of the hospitals.

The work of cleaning up in the hospitals in Reval has been completed and the commission has begun work at Narva. The Esthonian authorities have given the Red Cross officials every possible assistance. The chief of the commission has expressed himself as confident that the typhus epidemic will shortly be overcome, unless the disease suddenly grows unexpectedly widespread.

PUBLIC WATER SUPPLY CONTAMINATED BY AN INTER-CONNECTED PRIVATE WATER SUPPLY

CALEB MILLS SAVILLE.

*Manager and Chief Engineer, Water Department,
Hartford, Conn.*

Read before Sanitary Engineering Section, American Public Health Association, at New Orleans, La.,
October 28, 1919.

Private water supplies connected for emergency purposes to public supplies are a potential source of pollution. Check valves which a decade ago were considered safe have been subject to such changes in design as to be now condemned. Health officers should be on their guard against any commercial economy here that means health risk to their communities.

ORIGIN OF POLLUTION

THE amount of water which can be obtained from underground sources has been made the subject of numerous investigations. The quality of this water in its relation to health seems to have been somewhat overlooked. There seems generally to be a feeling that water which comes from underground is always of the purest quality and the deeper the well the better the chance of getting such water.

This opinion is probably based on the fact that water slowly percolating through fine gravel is purified in its journey and oftentimes appears in wells and springs, clear, cold and sparkling.

Reasoning from this, if water can be obtained from deep wells in gravel, it is undoubtedly a better water than that from near the surface. In wells driven into rock the popular fancy is that here is the best source of all. For what, seemingly, could be safer water than that obtained from the interior of a rock with an entrance of water from the surface, cut off by tightly sealing the hole around the casing pipe where it enters the rock.

Little thought is usually given as to the origin of this water supply said to come from solid rock many hundreds of feet below the surface.

A block of granite, or trap rock, or

sandstone even casually examined, seems to have little capacity for containing water in any quantity, and the most superficial observer would hardly be convinced that water could flow through the rock at the rate of from 20 to 30 gallons per minute, which is a common rate in the deep wells in Connecticut driven into rock.

By observing the exposed face of any rock quarry, however, we find that the supposedly solid rock is cut into blocks of greater or less extent, by a multitude of seams and oftentimes even by appreciable cracks.

These cracks appear to be at all angles, oftentimes even vertical or horizontal. They may be bedding planes as in the sandstones and shales, or due to pressure and contraction as in the igneous rocks. Whatever their cause, they readily may form channels down and along which surface water may move with more or less ease.

With this in mind it requires little imagination to understand that if there is at any depth a horizontal or nearly horizontal bedding plane intersecting these cracks from the surface, water from a considerable distance may flow freely under ground with none of the purification affected by its passage through beds of gravel or sand.

If one of the driven wells penetrating even several hundred feet through solid rock, at length enters a water-bearing crevice, there is every possibility that water drawn from it may be highly polluted from sources long distances away, and even from other surface drainage areas.

POLLUTION FROM PRIVATE SUPPLY.

An experience has recently been had concerning local pollution of a city water supply, which is both interesting and instructive. While, fortunately, it led to no serious results, the possibilities were such that a recitation of the facts may be of value in hunting down a possible source of contamination to public water supplies not always apparent to public health officers searching for a cause for an epidemic of water-borne diseases.

All of the water for the regular public water supply of Hartford, Conn., is treated with chlorine gas and furnished practically sterile to the city. Secondary infection was discovered by the daily bacteriological tests of tap water. The cause was sought and found in a connection with a private deep well supply to a large establishment located in the center of the city.

That the cause was discovered and the evil remedied was conclusively proven by the bacteriological tests before and after the closing of the connections and the fact that since then no suspicious conditions have been observed.

In the search for the origin of the pollution many hitherto unknown emergency connections to secondary supplies were discovered. At this time, and in connection with the search, an investigation was made of a number of secondary fire supply connections to factory property governed by so-called double check valves. A careful study was also made of the monthly inspection reports of these valves, extending over a period of about ten years, and a source of potential danger from these valves seemed

more real than had hitherto been supposed probable.

About the last week in June, 1918, the daily reports of the bacteriological examination of city water from the laboratory tap began to show positive results for *B. coli*, and in nearly every instance the differential test was confirmatory. At the same time no positive determinations were obtained from the samples taken at a testing tap a short distance below the chlorine gas station.

A careful study of conditions for a few days gave the following results: *B. coli*, raw water differential tests positive; treated water in 10 cc. differential tests negative; laboratory tap differential tests positive in 1 cc. The amount of chlorine gas used at this time was about 0.86 p.p.m. Soon after this the chemist reported that "the number of bacteria in the laboratory tap samples showed the usual effect of after growth and the presumptive test for the colon bacillus was positive twice in 0.1 cc., once in 1 cc., once in 5 cc. and once in 10 cc. Both tests in 0.1 cc. volumes and the one test in 1 cc. volume gave other characteristic growths of the colon organism. A positive test of the tap water was given special examination to determine whether the organism was a spore former, and a positive test from the raw water on the same date was carried through the same examination. Both organisms proved to be non-spore-forming types, the tap water sample showing 20% gas in lactose broth and the raw water sample 10% gas.

At this time three supply mains were bringing water to the city, the branching of these from the distributing reservoir being below the sterilization plant.

Although the *B. coli* determinations below this point had been negative, in order to eliminate any suspicion from the source of supply, samples were taken from each of the three mains at their entrance to the city. In all tests *B. coli* was absent in 10 cc. samples. This result seemed to indicate conclusively that

the water became polluted after reaching the city and that the results from the laboratory tap were due either to carelessness in sampling or to actual local pollution.

In order to get an idea of the possible location of the source of the trouble, circles defining zones were drawn every $\frac{1}{8}$ mile, using the laboratory location as a center. In these zones a number of samples were taken and subjected to intensive examination.

At the same time a careful inspection was made of all premises known or suspected of having secondary supplies in deep driven wells. Most of these supplies were used in connection with refrigerating plants because the water, while too hard for most domestic uses, was a number of degrees colder than the city water and therefore effected a saving in condensing processes. In most cases the connection was of small size governed by an ordinary gate valve with the city pressure from 30 to 40 lbs. higher than the well pressure. In all cases the city water was available in an emergency in case of failure of the private supply.

The result of the zone tests was very satisfactory and located the place of probable infection within an area about 2,000 feet square in the heart of the city business district and in the vicinity of the testing laboratory.

A careful inspection of the places in this area known to have auxiliary supplies, resulted in the elimination of a number where the secondary supply was without question carried always at a lower pressure than the city supply.

The search was thus narrowed to three suspected sources with evidence most strongly pointing to one of them. Tests of tap water for *B. coli* were taken in the vicinity of these three places, with the result that conclusive evidence of the origin of the trouble was located in the place expected. The cause of the trouble was as follows:

On account of drop in pressure in the city system during portions of the day when the draft was considerable, the city water failed to reach the upper stories of the building under consideration. This condition resulted in inadequate service to the sprinkler system, to remedy which a large tank was filled by pumping from a deep well driven into rock, a form of water supply quite common in Hartford, for certain purposes. The tank was connected with the piping from the city mains through two check valves, one of which was supposed to close when the city pressure rose to a point which would overflow the tank, and the other supposed to close when the city pressure became low, and so prevent water from the tank flowing into the city mains. The water pipes feeding the sprinkler supply were also tapped and connected so that water could be drawn from either system for supply to some parts of the building, the only safeguard between the two systems being a hand operated valve. Whether the cause of the injection of polluted water was due to leaking check valve or to some one carelessly leaving open the connection, is unknown. An interesting feature of the case, however, was a complaint received several months previously from a hair-dressing parlor, of the extreme hardness of the water on one or two occasions. As the city water has an alkalinity of from 20 to 25 and the well water about 200, the conclusion as to cause is now obvious, although at the time little attention was paid to the matter.

DOUBLE CHECK VALVE CONNECTIONS.

The order of the Board requiring complete severance of all connections with auxiliary supplies taken from sources other than the city supply resulted in a protest from several of the large manufacturing plants in the city. These establishments, in addition to the primary fire protection afforded by the city system, are required by the insurance underwriters to maintain an adequate secondary supply for emergency use.

Several of these plants take this supply from a very highly polluted stream running directly through the heart of the city and not only draining a populous area but also furnishing an outlet for some sewers and overflow for others.

These connections are supposed to be protected by the so-called double check valve system, which, in effect, is a pair of specially constructed check valves six or eight inches in diameter, with connections for draining the valves and testing their tightness predicated on observation of rise or fall in pressure under conditions of pressure on one side of the valve and none on the other.

Theoretically the scheme is perfect and without doubt the device is in general the most efficient one which has as yet been developed, if connection must be had between the city water and a polluted source.

Without question a secondary supply of ample proportion is necessary for the protection of important plants. This is required not only to protect property, but to safeguard life and insure continuity of employment to the inhabitants of a city, as well as to hold important industries where they are located.

There can, of course, be no argument but that no connection between a polluted source and a city water supply is a safer proposition, so far as protection of city health is concerned. In the case where a city supply is ample, both in quantity and pressure, for the primary protection, there seems no reason, except cost, why the secondary protection cannot be furnished by large cisterns underground or by elevated tanks, both filled with city water. I am aware of various objections which are offered to this method by some of the fire insurance companies, but it is a matter of fact that in localities where only city water is available, the underwriters accept the tank without increase in rates. This appears to be a good criterion on which to base opinion as to the efficacy of this method.

In the case of localities where the public supply is not adequate, it is necessary for the mill pumps to furnish the primary supply, the public supply acting as an auxiliary. In this case there may be some argument in favor of the connection between the two sources of supply. Without in any way minimizing the danger of the connection, the matter resolves itself into a question of expediency for local determination. That is, as a choice of two evils; which is the lesser danger to public health or risk of conflagration with its attendant hazard to human life and continuity of employment, not to mention loss of property?

Under the conditions just mentioned, if connection is decided to be necessary, without doubt the double check valve in its last design will afford the best protection at present available.

In cases where the city supply is ample, there seems no argument except that of cost of installation and maintenance of tanks. When public health is concerned, this argument does not appear valid, at least within reasonable limits of expense. What these reasonable limits are is one for local determination.

In the ten years' experience of Hartford, with twelve sets of check valves, the records show that eternal vigilance only can keep these valves even passably tight; that they do leak on the slightest provocation; that sometimes both valves have been found leaking at the same time; and that there is no assurance that they will remain tight even for a short period after test. The custom of inspection is a visit once each week to make pressure tests and once every four months for a thorough inspection of the entire valve.

In considering this matter, one of the best known sanitary specialists in the country, although endeavoring to see the matter as favorably as possible, yet felt constrained to say that while he believed such connections, (emergency supplies), could be made of little danger if installed

by a properly designed check valve system; that the present design was not satisfactory; also that as a general rule, health officers and practical water works operators are opposed to connections of this character. The present design was considered eminently satisfactory when brought out ten years ago and hailed at that time and since as a panacea for all dangers from pollution at connections,

yet since that time the device has been the subject of changes in design and is now unequivocally condemned. In view of these facts, the question naturally arises as to how far it is justifiable to proceed with the experiment for the sake of reducing cost, when the matter is one involving questions of health, particularly if it is possible to avoid these connections by other means.



CAMPAIGN AGAINST MALARIA IN CUBA, 1918-19*

F. VILLUENDAS, M.D.,

*Special Commissioner of the Cuban Department of Health and Charities,
Havana, Cuba.*

ORGANIZATION

Division of the Territory. The territory of the two provinces was divided into 11 districts and two subdistricts, taking into consideration the complex circumstances affecting the topography, the lines of communication, the roads; the resources, inhabited areas, agricultural enterprises, etc. Some of the districts comprised a single municipality, including the local health office (there is a local health office supported by the State in Cuba for each municipality); other districts comprised several of these, and others special extensions or areas of one or more municipalities.

Search for Paludics: Sanitary Police. There were created a number of offices of lay sanitary policemen in sufficient number in each district so that each of them could make the rounds of the district twice a week, following three different routes, which included the visiting of the hamlets, farms (sugar mills and cane plantations, etc.), groups of workers engaged in razing forests for

plantations, and country stores located on the roads and in the woods. These inspectors were furnished horses or railroad transportation. Every day after finishing his labor, each of these policemen was charged with making a written report covering the work done during the day, for which purpose a blank form was furnished him, and this report was in turn sent in to the local health officer or the medical inspector under whose orders the men worked. Their mission, which was explained in well-prepared written instructions, was to seek febrile cases, those suspected of being paludics, and others who through their appearance and worn-out condition should be suspected of being paludal, but without the recurrence of fever.

If the suspect was an ambulant worker without a family or permanent home in the locality, he was removed either to the infirmaries of the sugar mills or plantations, where mosquito-proof rooms were provided (protected with wire netting), or sent to the hospital, according to the locality where he was found.

If the patient had a home, or in cases of women and children, they were left

*A campaign lasting twenty months, beginning in January, 1918, and ending in August, 1919, was carried on against malaria in the provinces of Camaguey and Oriente.

in the home, but were provided with mosquito nets, given capsules of quinine, and subjected to rules and prescriptions which were rigidly enforced. If the rules were disobeyed the patients were then transferred to a hospital.

The policemen also had the duty of taking blood samples from the suspects and also from those entering the hospitals, before dosing them with quinine. The blood sample, to which a tag bearing the name of the suspect was attached, would then be sent to the Research Laboratory, and the result as to whether it was a positive or negative case was reported by telegraph. Positive cases were sent from the infirmaries to the special wards at the hospitals where the patients remained until examinations made at intervals of ten days should give negative result.

The sick who remained at their homes, especially women and children, were assiduously watched to prevent being bitten by mosquitoes, and were furnished with free quinine when necessary until they became well, as shown by the blood analysis made at the laboratories.

The majority of the owners of sugar mills and managers of cane plantations furnished the quinine required by their laborers, both for curative and for preventive purposes. The Sanitary Department also furnished quinine freely. Large signs in Spanish, English and French giving the laborers instructions to avoid mosquito bites, to take daily quinine which would be furnished them free, to communicate with the health officers in case of illness, and telling them what they should do in case they felt ill, were displayed at the railroad stations, restaurants, stores and places where people might gather. Pamphlets containing popular instructions were also distributed among them.

Examinations of the blood of children attending the boys' and girls' schools of the large as well as the medium and small-sized cities and towns

were conducted. In some cases from six to eight children among groups of from 60 to 80 were found to have the symptoms and infection, but without fever and attending classes. An investigation at the homes of these developed that there were other smaller children and women affected. Chocolate bonbons containing ten centigrams of tanate of quinine were used with success in cases of children. The teachers were left in charge of dosing them with three, four or five bonbons per day; others were treated at their homes, and in that manner much prevention was assured.

HUMAN ANTI-PARASITICAL CAMPAIGN

Anti-Anopheles Campaign (Against the Mosquito): The work in this connection was comparatively complex.

1. Agricultural concerns employing large numbers of men were made to install properly-isolated infirmaries well protected from mosquitoes, with a sufficient number of beds (in ratio to the number of laborers) in order to take care, without loss of time, of all suspects whether febrile or not. They were also required to employ nurses and a physician in order to obtain good blood samples and to apply quinine injections.

The sick were always transferred to these infirmaries during the day time, during which hours the anopheles mosquito is rarely found at large, but always under mosquito netting to avoid infection.

2. It was also demanded that the sleeping quarters of all residents of plantations, from the highest employees down to the field laborers, and whether located in large quarters or in small barracks, as well as the rooms of all merchants having their quarters at the large plantations, should be protected with wire nettings covering all openings and entrances with double or triple sets of doors, to prevent the ingress of mosquitoes. It was also demanded that all laborers sleeping in open quarters

in the field should be provided with mosquito nets.

3. The work also comprised the canalization, cleaning and removal of all grass and shrubs for a distance of two kilometers from all streams in and around the places where large groups of men had their quarters. At the large sugar mills, which are small towns in themselves, systems of sewage were installed in and around the mills; and at others the springs and water courses were lined with concrete for a distance of two kilometers from the mill.

The extensive and constant labor of leveling the ground to prevent the formation of pools and the canalization of the streams during the dry season was also carried out. Wherever it was possible, a well was dug near the location of large pools, until an absorbing stratum was reached and the water allowed to run into it. The pool was then filled in. In other cases the water from these pools was diverted into some large stream by means of costly canals.

The medical officers of the department are now obtaining topographical plans of the sugar mills grounds and the large plantations in order to point out to the proprietors the way to change the course of the streams and how to proceed with their canalization, refilling, etc.

4. **Petrolization and Other Resources.** Besides the work carried out as above there was maintained an extensive as well as continuous campaign of petrolization of the stagnant waters and the small streams, which were kept free of the small weeds which are always sought by the anopheles. The most practical method of petrolization

was found to be the submerging in the streams of bags filled with sawdust which had been previously immersed in tanks filled with petroleum during 48 hours. These bags, which are made in different sizes in accordance with the width of the stream, are placed at a distance one from another in accordance with the strength of the current and volume of water. The bags are nailed to sprigs of wood, fastened to the bottom or bed of the spring and are renewed every eight or ten days. The oil escaping from the sawdust comes out on the surface perfectly atomized, and forms a film on top, which it has been found after having tried every system imaginable, is not obtained in any other manner. When it has not been possible properly to petrolize accidental volumes of water (at the mines and quarries), the proceeding adopted has been to dissolve salt in order to form a strong solution which has prevented the formation and development of mosquito larvæ.

The process of petrolization is singularly favorable during the dry season (the dry and rainy seasons in Cuba are irregular). By reducing the volumes of water where the anopheles may deposit their eggs the breeding of mosquitoes may be reduced, and when the rain season comes the strong currents carry away the small masses of larvæ remaining and there ensue periods when the number of mosquitoes is reduced to the minimum. The work performed has converted into healthy regions, zones which were formerly ravaged by endemic malaria. It is a hard labor which requires assiduity and tenacity, because any interruption might cause the advantage gained to be lost.

The A. P. H. A. Meeting is only a month away.
San Francisco—September 13-17, 1920.

THE COUNTRY SLAUGHTERHOUSE; HOW TO BUILD IT

G. H. PARKS

Expert on Sanitation, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Read before Section on Food and Drugs, American Public Health Association, at New Orleans, La., October 28, 1910.

IT is estimated that in the year 1918 of all cattle slaughtered in the United States 3,921,000 were killed in establishments not operating under the Federal Meat Inspection Act of 1906; the estimate for calves is 4,310,000, and for swine 28,640,000 head. Of the number of animals enumerated some were slaughtered by the farmer on the farm, and the larger number were killed in the country slaughterhouse.

As such a large proportion of the animals are slaughtered in the country slaughterhouse, it is needful that the slaughterhouse shall be constructed so that sanitary conditions can be maintained.

In surveys made in several states the slaughterhouses were found in such insanitary conditions that if clean, healthful, wholesome meats were to be provided, extensive alterations in the buildings and surroundings were imperatively necessary. Methods of operation also required modification. The following descriptions of conditions disclosed by the surveys are taken from the files in the Bureau of Animal Industry of the United States Department of Agriculture. The slaughterhouses where animals are killed for local consumption are usually isolated and scattered about the town, either situated on some back street surrounded by stables and dwellings, or outside of the corporate limits where they are not subjected to undesirable observation.

One state reports that of 327 slaughterhouses inspected, only 23, or about seven percent, were found to fulfill sanitary standards adopted by the state. The Act approved contained the following: Insanitary conditions shall be

deemed to exist wherever and whenever any one or more of the following conditions appear or are found, to wit: If the slaughterhouse is dilapidated and in a state of decay; if the floors and side walls are soaked with decaying blood or other animal matter; if efficient fly screens are not provided; if the drainage of the slaughterhouse or yard is not efficient; if maggots, filthy pools, or hog wallows exist in the slaughterhouse yard or under the slaughterhouse; if the water supply used in connection with the cleansing or preparing is not pure and unpolluted; if hogs are kept in the slaughterhouse yard or feed therein on animal offal, or if the odors of putrefaction plainly exist therein.

At nearly all slaughterhouses inspected, foul, nauseating odors were evident for yards around; swarms of flies filled the air and the buildings, and covered the carcasses which were hung up to cool. Beneath the houses was to be found a thin mud or mixture of blood and earth churned by hogs, which are kept to feed on offal. Maggots frequently existed in numbers so great as to cause a visible movement of the mud. Water for washing meat was frequently drawn from dug wells, which receive seepage of the slaughterhouse yards, or the water was taken from the adjoining streams, to which the hogs had access. Dilapidated buildings were the usual thing, and always the most repulsive surroundings and odors existed. Slaughterhouses of fair sanitary condition were not found. They were abominably bad or else met the standard completely.

Reports from other states present similar conditions, but it is not necessary to give additional descriptions.

Another feature to be noticed in connection with the subject is that every slaughterhouse may be a potential center of disease, and naturally the poorer the condition of the premises the more dangerous it is. This fact is apparent from the character of the work performed. Even if only a few animals are slaughtered each week, the total number may amount to several hundred during the year and it is probable that some of the animals are diseased. If the offal from diseased animals is fed uncooked to the hogs which are raised upon the grounds the latter may become infected. Rats frequently overrun the place, and they in turn may become infected with trichinæ. Rats act as direct transmitters of trichinosis to hogs.

If a slaughterhouse should be burned or abandoned as sometimes happens, the rats which inhabited the premises will wander to neighboring farms, and will carry with them the disease that they have contracted from eating diseased offal. If hogs suffering from hog cholera or swine plague are killed and the offal thrown into the yard draining into a creek, the creek becomes contaminated and the disease may spread to the farms lower down the creek.

A country slaughterhouse then to be operated under sanitary conditions should be planned to include essential features as follows: (first) suitable location; (second) abundant water supply; (third) buildings so constructed that they may be kept clean with the least amount of labor.

LOCATION.

The lot should possess natural drainage in order that pools of water will not be formed on the surface of the ground and remain sufficiently long to become stagnant. If the natural grade does not furnish efficient drainage, the lot must be graded and ditches or sub-soil drainage must be supplied.

The slaughterhouse proper should be so located on the lot that direct sunlight may be admitted on three sides of the killing room. This condition can be ob-

tained if the cooler is towards the north, and the holding pens are towards the south. The east and west sides of the cooler may be shaded by other buildings or by trees, but the killing room should be in the open. Where the cooler is exposed on three sides, the arrangement shown is best, as the walls of the cooler are subjected to the least variation in temperatures and there is, therefore, a more even temperature maintained in the cooler with a resultant saving of ice.

WATER.

The water must be potable and must be obtained from a supply that is not subjected to pollution from any source, and the supply must be ample to permit of free use in cleaning the premises, both within and without the buildings, after killing operations have ceased for the day.

PLAN AND CONSTRUCTION.

The slaughtering plant may consist of one or more compartments. If of but one room, it will be a compartment in which the animals are killed and the carcasses dressed and prepared for food. An addition to serve as a cooler should be provided if it is necessary to hold the carcasses longer than a few hours and the temperature of the locality is higher than 45° F.

KILLING ROOM.

The killing or slaughtering room should be constructed with an impervious floor, and with tight, smooth walls and ceiling. Numerous windows should be installed in the outside walls so that an abundance of direct natural light can be admitted, as sunlight is of assistance in maintaining sanitary conditions.

The floor of the room should be made of concrete, asphalt, or vitrified brick, and the floor must be so constructed that it will slope or pitch to floor drains which may be either gutters or cast iron stable traps. There must be sufficient slope or pitch to the floor to allow all liquids to flow without interruption to the gutters or drains which must be of sufficient size to carry off the drainage quickly. A pitch of $\frac{1}{4}$ inch to the foot is sufficient for a properly constructed floor, but it

is better to make the pitch $\frac{3}{8}$ of an inch to the foot to overcome the inequalities of the floor due to faulty construction and faulty workmanship.

WALLS AND CEILING.

The walls and ceiling of the room should be as smooth as possible. The walls to a height of at least six feet from the floor should be made impervious to all liquids so that they can be readily washed and kept clean. Above the impervious portion the studs should be sheathed with matched and dressed lumber. Matched and beaded ceiling should not be used as the recesses formed by the beads furnish crevices for the lodgement of dirt and dust and also furnish breeding places for vermin. Portland cement plaster may be used on the walls, or galvanized metal sheets may be nailed to the wooden sheeting of the walls. If metal sheets are used all joints, both vertical and horizontal, must be soldered to prevent liquids and vermin from gaining access behind the metal sheets. The ceiling should be sheathed in order that there will be no accumulation of dirt, dust, and cobwebs, and the labor of cleaning the room thereby increased. Some ceilings will require less paint as the surface exposed is less than if the rafters or ceiling joints are left uncovered.

WINDOWS.

The windows of the killing room should be as numerous as the wall space will permit. They should be located so that the lower edge of the sash will be about five feet from the floor and the tops of the windows as close to the ceiling as construction will permit. The windows may be either sliding sash or casement sash that are hinged to swing like a door. The casement sash permits of the entire opening to be used and will therefore admit more air, which is an advantage in warm climates. All openings must be screened to prevent the entrance of flies and other vermin.

CONSTRUCTION.

The building may be constructed with a balloon frame superstructure and concrete foundation. The portion under the cooler is excavated to furnish a hide cellar. The portion below the killing room and fore-cooler is not excavated but is to be filled in with gravel or broken rock to a sufficient height to carry the concrete floor of the killing room. The purpose of the rock filling is to prevent ground water from being absorbed by the concrete floor, and it also permits the floor to dry more thoroughly. A storage space for hides is provided in the cellar under the chill room. The hide cellar should have an entrance from outside the building as this will prevent the odors from the hides permeating the building.

The offal and other refuse incident to killing operations should be removed daily from the premises and the premises should be kept clean to prevent maintaining a nuisance and also to eliminate fly-breeding places.

HANGING ROOM AND COOLER.

The hanging compartments are of two kinds, one in which the carcasses can be hung to dry and to remove a part of the animal heat. Animal heat will not be reduced materially below the temperature of the surrounding air. The other kind of a hanging room consists of a compartment in which the air is chilled by means of ice or mechanical refrigeration.

In localities where the temperature is higher than 45° F. the cooler or chill room will be necessary if the carcasses are to be held in storage longer than a few hours. The chill room is so constructed that the floor, walls and ceiling do not permit a rapid exchange of air from the inside to the outside of the building. The air of the room is, therefore, partially under control and can be maintained at a nearly even temperature by means of refrigeration.

Go with the Forty-niners to San Francisco,
A. P. H. A. Meeting, September 13-17, 1920.

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

Publication Office: 124 W. Polk Street, Chicago, Ill.

EDITORIAL OFFICE: 169 MASSACHUSETTS AVE., BOSTON, MASS.

A. W. HEDRICH, C. P. H., Editor

J. RITCHIE, Jr., Associate Editor

Editorial Assistants

E. R. HAYHURST, M.D.

P. M. HOLMES, M.D.

FRANCIS H. SLACK, M.D.

DAVID GREENBERG

JAMES A. TOBEY

JAMES M. STRANG

M. P. HORWOOD, M.S.

HOMER N. CALVER

Board of Advisory Editors

PETER H. BRUCE, M.D., Ottawa, Canada

PROF. M. J. ROSENAU, Boston, Mass.

CHARLES V. CHAPIN, M.D., Providence, R. I.

PROF. W. T. SEDGWICK, Cambridge, Mass.

EUGENE R. KELLEY, M.D., Boston, Mass.

PROF. GEORGE C. WHIFFLE, Cambridge, Mass.

W. A. EVANS, M.D., Chicago, Ill.

PROF. S. M. GUNN, Paris, France.

All expressions of opinion and all statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

NOTICE TO SUBSCRIBERS: Subscription Price, payable in advance, \$4.00 per year for United States and possessions; \$4.50 for Canada and other foreign countries. Single copies, 50 cents postpaid. Membership in the American Public Health Association, including subscription to Journal, \$5.00 per year. In Change of Address please give both old and new address, and mail before the tenth of the month to take effect with the current issue. Mailing Date, 5th of each month. Advertisements accepted only when commendable, and worth while both to reader and advertiser. News Items, interesting clippings and illustrations are gladly received, together with name of sender. Copyright, 1919, by A. W. Hedrich.

EDUCATION AND HEALTH ADMINISTRATION

A leading lawyer in an important city of Greater Boston narrowly escaped death or injury not long ago from an express train. He disliked to use the subway connection between the platforms, and made a practice of climbing the fence between the tracks to get from one side of the station to the other. He did this one day in the face of an oncoming express train and by the merest chance, thanks to the cries of the spectators, escaped a horrible fate.

It is probable that he has received many messages of congratulation, but it is very doubtful whether a single individual has expressed to him his disapproval of his practice. As an upholder and defender of the laws, it should have been his duty to take cognizance of the regulations and barriers established by a corporation to protect the users of its property from injury. In his neglect to observe the railway regulations he typifies an unfortunate failing of the American citizen—lack of discipline, and in this we are widely at variance with the people of European countries. It is said that in Paris a man who is run over by a street conveyance is fined because he had no business to be in the street in the way of the vehicle. Whether this is actually true or not, the principle exists in France, in Germany, in other Continental countries, of implicit obedience to formal laws and regulations. Their military training instills discipline into their daily actions. In this country, with its intense spirit of personal liberty, the citizen is apt to forget the regulations if out of sight of the policeman.

This characteristic independence, if it may so be termed, is one of the fundamental difficulties that confronts the health officer. He finds himself face to face with a carelessness or indifference or actual objection on the part of his citizens, and it is largely on account of this feeling that the police powers of the boards of health are necessary. Most of the routine work and most of the expenditure of money are required to oblige "law-observing" citizens to conform to those rules that have been formulated for the benefit of all.

Education of the people in public health has an importance that few are yet willing to ascribe to it. In the first place, public opinion formed through education is necessary in order that the health officer may properly formulate the regulations for his municipality. He cannot for any length of time maintain any standard in which he has not the support of his people. In the second place, education in public health and sanitation is necessary in order that the health officer may not spend his time solving the problems which a careless and unthinking public sets before him. Careless and unthinking individuals invite disease, help in its dissemination, and aid in establishing insanitary conditions, and they do this not with malice aforethought. Discipline, realization of the importance of obeying rules and regulations, is a first step towards their reformation. Public health education is a quick way to establish the proper state of mind. It should be a foundation stone on which the health administrator can confidently rest his preventive work.

MODERN MEDICINE

It is becoming more and more apparent to the medical profession that increase in knowledge in the medical sciences is so rapid and has come to cover such a variety of subjects that it has long since become impossible for any one man to keep abreast of all the branches of medical work. In a report submitted to the English Ministry of Health by the Consultative Council on Medical and Allied Services, the failure of the present organization of medicine to bring the advantages of medical science within reach of the people is noted: "Medical treatment, while becoming more effective, tends at the same time to become more complex. As the complexity of treatment becomes greater, it grows increasingly difficult for the individual practitioner to administer the full range of treatment requiring, as it does, access to such resources as those of bacteriology, bio-chemistry, radiology and electro-therapeutics, while the number of patients who can afford to pay for it diminishes."

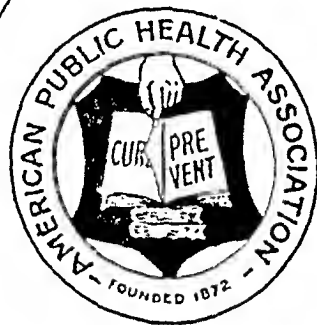
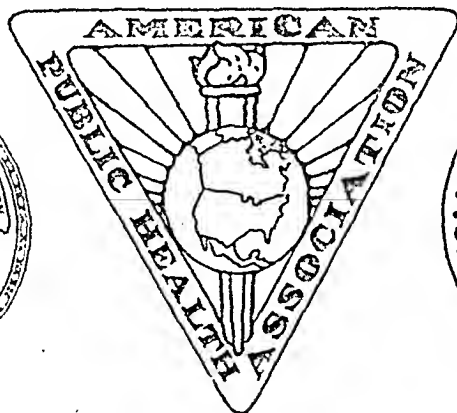
The remedy seems to be as pointed out in recent articles on this subject in the organization of group diagnostic clinics. In such clinics the patient instead of traveling about the country and visiting specialist after specialist, receives, in one or two consultations, the coordinated efforts of a group of specialists working together. These clinics—and a great number are already established, the largest of which is that conducted at Rochester, Minn., by the Mayos—have been eminently successful in bringing to light the nature of certain difficult and obscure cases and relieving the patient of the necessity of paying exorbitant fees.

The New York State Department of Health realizing the value of such clinics to the residents of the state as a measure in health conservation, particularly in rural parts of the state where the most modern facilities for diagnosis of disease are not readily accessible, such as the laboratory and the X-ray, has undertaken the task of bringing these facilities to the public for its use. A description of the organization and operation of one of these clinics is described on another page of this issue. This is a most important and far-reaching step in the interest of health conservation and the prolongation of life and from the results obtained in New York State this group consultation clinic promises much for the future of public health in this country.

D. G.

INSIGNIA FOR THE A. P. H. A.

In the July, 1919, number of the Journal a prize offer was announced for an Association emblem intended for use on the membership certificate, stationery of the Association, for affiliated health organizations, and similar purposes. A few designs which could easily be reproduced are shown with this article. Many interesting ideas were submitted, but none were considered suitable by the Committee on Association Emblem. The idea suggests itself of extending the contest until the time of the annual meeting. This will permit members to think the matter over while on the train to the San Francisco meeting.



Emblems may be divided into two classes: first, simple designs, more or less geometrical in character, such as the Red Cross, Tuberculosis Cross, the Swastika, etc.; second, designs which tell a story or appeal to "human interest," such as coats of arms, the bell of the Bell Telephone Company, the picture of the two happy kiddies in the emblem of the Child Health Organization, etc.

Most of the designs offered to date fell within the second class. A considerable number showed maps of America as a prominent part of the design; others showed the American eagle; and still others showed a variation of the Caduceus. The Committee felt that these were not distinctive enough and that they probably would be confused with other emblems if, indeed, the Association would not be charged with plagiarism.

The greatest obstacle to date seems to have been the difficulty of emblemizing the idea of health. The goddess Hygeia has been suggested. The use of such a figure requires a label, as Hygeia to almost every one of us looks about the same as any other Grecian woman.



A few suggestions follow:

1. Simplicity is desirable. Highly complicated designs do not invite the attention of the observer.
2. If the idea of health or the fundamental object or characteristic of the Association can be suggested by the design, so much the better.
3. Ideas will be acceptable as well as designs, but a sketch will be helpful even if crude.

Designs should be mailed to the Secretary, addressed as follows: Secretary, American Public Health Association c/o Memorial Auditorium, San Francisco, Calif., or may be handed in the Registration Desk at the Association Headquarters in San Francisco, not later than Monday, September 13. Each suggestion should be labeled with a pseudonym, the key of which should be placed in a sealed envelope accompanying the design. The following prizes will be awarded by a committee at the San Francisco meeting:

- \$20 for the best suggestion.
- \$10 for the second best.
- \$ 5 each for the five next best.

BOOKS AND REPORTS REVIEWED

The Nation's Food. A Statistical Study of a Physiological and Social Problem. Raymond Pearl. Philadelphia: W. B. Saunders Co., 1920. Pp. 274. Price, \$3.50 net.

This book consists primarily of a critical survey of the food resources of the United States, for which the author is rather exceptionally qualified, through his connection with the Statistical Division of the Food Administration.

The basis of the survey is mainly physiological, since it deals with the proportion of nutrients in food rather than gross totals, the food values being based on the well-known work of Atwater and Bryant. The material has been largely compiled from the census figures, the Department of Agriculture Yearbook, and marketing statistics from the Bureau of Markets. Estimates by those familiar with production have been relied upon in some instances.

Nutritive materials are classified as "primary," used as human food without intervention of animals, such as potatoes, fish or wheat; and "secondary," including edible products of animals used for human food, such as honey, eggs, milk and meats.

In the production of human foods the grains, meats and dairy products are the most important, in the order named. The United

States is shown to be a grain producing nation. Of the ordinary grains, the survey shows conclusively the paramount importance of wheat. The energy content of the country's wheat crop is nearly double that of its nearest competing commodity. The wheat crop, the hog and the cow together account for 62% of the protein and carbohydrate used as human food, 69% of the fat and 65% of all the calories.

It is interesting to note that the relative importance of certain foods is not at all in accord with popular notions. A few commodities furnish a very large proportion of the nutritional intake of the people. The foods contributing most to the total calories consumed, in order, are wheat, pork, dairy products, sugar, corn, beef, oils and potatoes. It is rather a surprise to note the comparatively low rating taken by the corn crop, and to find that sugar, sometimes considered a pleasant but not essential part of the dietary, contributes more than 20 times as much to the carbohydrate intake of the nation as does rice. The only vegetable making a significant contribution to the food resources is the potato, and this amounts to less than 4%. Apples contribute about twice as much as rice and nearly three times as much as fish. As a natural corollary of the low rating of veg-

tables, it is shown that the home garden movement, patriotic and desirable as a war measure though it may have been, contributed to the total nutritional resources of the country only an extremely insignificant bit.

The statistical figures bring out clearly the discrepancy between theory and fact with reference to human food consumption. Theoretically, the American man may need only 50-75 grams of protein per day to sustain life; actually, he uses up about 120 grams. If the figures of the last seven years form any criterion, the latter figure is the one that we must count on supplying to each man equivalent of the population for some time in the future. There has actually been, in spite of patriotic pleas and "save food" slogans, only a very slight decrease in per capita gross food consumption since 1911. This decrease is probably due mostly to some reduction in the wastage of edible foods.

A. G. WOODMAN.



The Woman of Forty. E. B. Lowry, M. D., Chicago: Forbes & Company, 1919. Pp. 194. Price, \$1.25.

An important addition to the list of ten books in the sex hygiene series written by this author. He here focuses and brings to attention many self-evident truths which are abundantly worth while assembling. Dr. Lowry's admonition appears to warn against mental as well as physical obesity at forty. By keeping her interests keen, her philosophy sound, and her sympathies broad, the opportunity for the woman of forty to achieve health, happiness, and success is as great as ever. The author calls to attention the fact that a large percentage of famous women have become so after forty. The book is of vital interest to the women approaching middle age. It gives simple and reliable advice for the care of the health at this period, and is written in a clear and practical way.



The Problem of Nervous Breakdown. By Edwin Lancelot Ash, M. D., Macmillan, New York, 1920. Pp. 299. Price \$3.50.

This is a non-technical book of general interest and usefulness. In four well-balanced divisions it discusses the origin, the varieties, the prevention and treatment of nervous states, and the special cases produced by the war. The point of view is sane and superior to the advocacy of any

exclusive therapeutic method. Full justice is done to both psychological and physical systems. There is a wealth of classical and literary allusion reminding one of Osler's fascinating expositions. The author looks somewhat coldly upon the Freudians and ventures the opinion that the tide is setting against them.

Some passages are rather prolix and there are curious awkward phrases. What, for example is meant by "not unseldom?"—an expression repeatedly used. It is easy to overlook the defects of the text for it brings together in its moderate compass a body of material difficult to gather from the literature and of great value. Much first-hand observation is transcribed from Dr. Ash's own notes.

PERCY G. STILES.



Pathogenic Microorganisms. William Hallock Park, M. D., and Anna Wessels Williams, M. D., assisted by Charles Krumweide, Jr., M. D. 7th edition. Philadelphia: Lea & Febiger. Price, \$6.00.

This work has won a well deserved reputation both as a practical aid to the laboratory technician and as an excellent text-book.

The seventh edition contains much new material and it is evident that great care has been taken to make a thorough revision and to bring the subject matter as nearly as possible up to date.

Among other changes it is noted that the chapter on media making has been practically re-written and contains very complete directions for determination of the hydrogen-ion concentration or actual acidity of the media.

The Wassermann and other complement fixation tests are more thoroughly dealt with than in previous editions. The complement-fixation test for tuberculosis is recognized as a valuable diagnostic aid with the use of antigens made from moist suspensions of whole bacilli or from defatted dried bacilli.

There is a very complete résumé of the technique for determination of pneumococci types and also much additional matter in relation to streptococci and to influenza.

The new edition contains 786 pages as compared with 709 in the sixth. There are a number of new engravings. The plates are the same as in the previous edition though not quite so well colored.

As a practical reference book thoroughly covering the subjects of pathogenic micro-organisms both bacterial and protozoan, their cultivation and care, the problems of immunity, the various laboratory tests and examinations; the book is a mine of information carefully compiled by experts who have thorough and practical knowledge of the subjects they present.

FRANCIS H. SLACK, M. D.

✦

A MAGAZINE IN FOUR TONGUES

The *International Journal of Public Health* which was issued in July for the first time is expected to become, in the words of the editor, "an authoritative medium for the diffusion of knowledge in the vast field of public health and preventive medicine, subject of rapidly growing importance and fraught with the greatest possibilities for the healing of the nations and the welfare of mankind." It is published as a bimonthly by the Department of Medical Information of the General Medical Department of the League of Red Cross Societies. It is the official scientific organ of that league, and is, of course, published in Geneva, Switzerland. The editor is Dr. Thomas R. Brown, Chief of the Department of Medical Information. The magazine will appear in four editions, English, French, Italian, and Spanish, each containing the same material. The names of the foreign editions are, respectively, *Revue Internationale d'Hygiène Publique*, *Rivista Internazionale di Sanità Pubblica*, and *Revista Internacional de Sanidad*.

The *Journal* will be scientific and technical in nature, making its appeal to professional workers in the field of public health and preventive medicine throughout the world. The first three numbers, it is announced, will be distributed gratis in all parts of the world to organizations and individuals actively interested in any matter pertaining to public health. The magazine is a companion publication to the *Bulletin of the League of Red Cross Societies*—a popular periodical founded for the purpose of promoting "that education of the people which in all communities is a *sine qua non* for the introduction of effective public health measures and legislation."

There will be published in the *International Journal* original articles of scientific and practical import, critical reviews on subjects of timely interest, abstracts of important articles appearing in other special journals and in the general medical literature, and demographical notes and statistics bearing upon health conditions in all parts of the world.

Perhaps the most interesting feature of the first number is the series of signed reviews covering a large number of public health subjects under the general headings of communicable diseases, social hygiene, child welfare and nutrition, tuberculosis, hygiene and sanitation, nursing, and malaria. The original articles in this number are contributed by Prof. A. Calmette, Assistant Director of the Pasteur Institute; Dr. Richard P. Strong, General Medical Director of the League of Red Cross Societies and Professor Tropical Medicine at Harvard University Medical School; Prof. Ad. d'Espine, Professor of Pathology and Diseases of Children in the University of Geneva; Prof. George C. Whipple, Chief, Department of Sanitation, General Medical Department, League of Red Cross Societies, and Professor of Sanitary Engineering, Harvard University; Prof. Giuseppe Tropeano, Professor of Social Medicine, Royal University of Naples; and Miss Alice Fitzgerald, Chief, Department of Nursing, League of Red Cross Societies.

The publication of this *Journal* is one of the most significant developments attendant upon the decision of the Red Cross societies of the Allied nations to enter the field of public health in full strength. It typifies in its dignified and well arranged pages the organization which has spelled Red Cross strength in the past and which, on an international scale, may be wielded for great good in the field of public health.—

R. H. BRITTON.

For preliminary Programs of the San Francisco meeting, see the News Letter for August. If your copy has not reached you, send for another.

ASSOCIATION NEWS

HEALTH EMPLOYMENT BUREAU

HELP WANTED

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the first of each month. In answering keyed advertisements, please mail replies separately and to editorial office in Boston, Mass.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Laboratory technician in state of Ohio. Must be able to do Wassermanns. Salary \$1,600 to \$1,800. Address 380, R. P. M., care of this *Journal* at Boston address.

Competitive examination to fill two vacancies in district health office force. Will be held by the Mass. State Dept. of Public Health at the State House, September 20th and 21st, 1920. All persons interested in public health work and possessing necessary qualifications are requested to communicate with Dr. E. R. Kelley, Commissioner of Public Health. Initial Salary \$3,000.

Two assistant sanitary engineers for the Illinois State Department of Public Health. Salaries to start, \$1,500 to \$1,800 per year. Assistant analyst for the water and sewage laboratory at a salary of \$1,500 per year. Recent graduates could qualify for these positions. The positions are under Civil Service but temporary appointments could be made, to be followed by examination which men who can suitably qualify should readily be able to pass. According to the State law, preference is given to men who have been in the military or naval service. For further information address Dr. C. St. Clair Drake, Director of the State Department of Health at Springfield, Ill.

Health Officer for a Southern town. Population about 12,000. Salary from \$2,200 to \$2,700. General health work including laboratory examinations, sanitary inspection, dairies, etc. Address Box 560, Goldsboro, N. C.

Position of Assistant in the Health Department of a large University in the Middle West is open. Young Physician with hospital training and knowledge of the principles of Public Health preferred. Communicate with No. 111, M. J. W., care of this *Journal*, Boston, Mass.

+

POSITIONS WANTED

Position - wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the first of the month.

Wanted: Health work by a graduate in medicine and public health; about ten years' experience, including county, state and municipal, both administrative and educational; will furnish any kind of reference required. Address 127, W. L. H., care of this *Journal*, Boston, Mass.

Will be at liberty to accept location as health officer or to do general sanitary and publicity work about October 1. Now have the rank of Major in Reserve Corps and commission in Public Health Service as P. A. Surgeon. Further details by correspondence. Address 128, care of this *Journal*, Boston, Mass.

Assistant Chief of Bureau of a State Health Department, with experience in organization, lecturing, clinic supervision and public health education; ex-officer, Army Sanitary Corps; other executive sanitary experience; B. S. degree; *wants position*, with salary of \$3,600; requiring ability and experience worth more. Address No. 129, M. M. W., care of this *Journal*, Boston, Mass.

Wanted: Position as Medical Inspector of Schools by a Woman Physician experienced in this work. California preferred. References. Address H. C. M., No. 126, care of this *Journal*, Boston, Mass.

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

July 21 to August 3, 1920, inclusive.

Names of Sponsors are set in Bold Face Type.

Names of New Members are in Light Face Type.

CALIFORNIA

- J. Severy Hibben, M. D., Pasadena.
Charles W. Arthur, Ph. D., City Bacteriologist, Pasadena.
- I. R. Bumerell, M. D., Sacramento.
Katherine E. Reardon, R. N., State Bureau of Social Hygiene, Fresno.
Mrs. Robert T. Devlin, Red Cross Public Health Activities, Sacramento.
Mrs. Augusta L. Fraser, Social Service Worker, San Diego.
- E. F. Glaser, M. D., San Francisco.
Edward T. Ross, Sacramento.
A. Wallace McWhinnie, Sanitary Inspector, Visalia.
- William C. Hassler, M. D., San Francisco.
Joseph C. Astredo, Chief Probation Officer, San Francisco.
I. Irving Lipsitch, Supt. of Social Service, San Francisco.
- Karl F. Meyer, M. D., San Francisco.
E. C. Fleischner, M. D., San Francisco.

COLORADO

- Clifton G. Hickey, M. D., Denver.
Penny O. Clark, Supt. Presbyterian Hospital of Colorado, Denver.

CONNECTICUT

- Stanley H. Osborn, M. D., Hartford.
J. Frederick Baker, County Health Officer, New Haven.
- Philip S. Platt, New Haven.
Alice Musaryk, M. D., President Czech-Slovak Red Cross, Prague, Czechoslovakia.

ILLINOIS

- Maximilian Kern, M. D., Chicago.
Hugo Friedstein, M. D., Instructor Pediatrics, Chicago.
- E. L. Lobdell, M. D., and W. A. Evans, M. D., Chicago.
- Jennie B. Clark, M. D., Chicago.
- T. J. Brophy, Danville.
W. C. Dixon, M. D., Health Commissioner, Danville.
- LeRoy Newlin, M. D., Robinson.
- C. St. Clair Drake, M. D., Springfield.
George Hoffman, M. D., Chester.
W. H. Enghring, Commissioner of Public Health, Edgingham.
E. D. Wing, M. D., Galesburg.
George J. Wolner, Kankakee.
Clarence N. McCumber, M. D., Lewistown.

IOWA

- Professor Earle L. Waterman, Iowa City.
Alice J. Prattle, R. N., Red Cross Executive Nurse, Oskaloosa.

MARYLAND AND DISTRICT OF COLUMBIA

- R. H. Riley, M. D., Baltimore.
Henry P. Fahrney, M. D., County Health Officer, Frederick.
- Carroll Fox, M. D., Washington.
Howard W. Barker, M. D., P. A. Surgeon, Washington.
- Alan C. Sutton, M. D., Washington.
Major George C. Dunham, Medical Officer, Army Medical School, Washington.
- James A. Tobey, Washington.
Thomas E. Green, Ph. D., Director Speakers Bureau, American Red Cross, Washington.

MASSACHUSETTS

- B. W. Carey, M. D., Boston.
Clifford S. Chaplin, M. D., Great Barrington.

MICHIGAN

- J. H. Kellogg, M. D., Battle Creek.
Lenna F. Cooper, Battle Creek.
- Matilda W. Robinson, R. N., Ypsilanti.
Ursula Fulton, R. N., Red Cross Nurse, Ypsilanti.

MINNESOTA

- C. E. Smith, Jr., M. D., St. Paul.
J. W. Hawkhuson, D. O., City Health Officer and County Physician, Luverne.
Arthur A. Wohlrahe, M. D., Health Commissioner, Mankato.
Irving H. Kiesling, M. D., Health Officer, Nashwauk.
W. V. Lindsay, M. D., Health Officer, Winona.

NEBRASKA

- Professor H. H. White, Lincoln.
Drs. Welch, Rowe and Lehnhoff, Lincoln.

NEW HAMPSHIRE

- A. W. Hedrich, Boston, Mass.
W. G. Weber, M. D., Alton Bay.

NEW JERSEY

- Raymond S. Patterson, M. D., Trenton.
W. Henley Smith, M. D., Trenton.

NEW YORK

- Dulsey J. Ball, M. D., Glens Falls.
M. R. Engel, M. D., Health Officer, Hyndsville.
Mrs. Elmer Blair, Chairman, Public Health Dept., General Federation of Women's Clubs, New York City.
- John A. Conway, M. D., Hornell.
W. T. Jones, M. D., Horseheads.
- V. A. Moore, Hhuen.
M. Alves deSouza, M. S., Veterinary Inspector, Ministerio de Agricultura, Rio de Janeiro, Brazil.
- LeRoy W. Hubbard, M. D., Mt. Vernon.
Elizabeth J. Nash, R. N., Supervising Nurse, Middletown.
Alyce M. McGauley, R. N., Supervising Nurse, State Dept. of Health, Schenectady.
- A. W. Hedrich, Boston, Mass.
Vincent A. Caso, Ph. D., Laboratory Director, Brooklyn.

NORTH CAROLINA

- W. S. Rankin, M. D., Raleigh.
Frank G. Atwood, New Haven, Conn.

OHIO

- Frank I. Mayer, Chillicothe.
L. C. Lehman, Versailles.
- G. W. Moorehouse, M. D., Cleveland.
Malcolm L. McBride, Cleveland.
- Correction: Minna T. Meyer, whose name appear in the list of new members for June as Health Commissioner, is visiting nurse for the City Board of Health, Columbus.

PENNSYLVANIA

- I. M. Gluec, M. D., Philadelphia.
A. S. Cantor, M. D., Dickson City.
- A. W. Hedrich, Boston, Mass.
Joseph R. T. Gray, Jr., M. D., City Bacteriologist, Chester.

RHODE ISLAND

- Fred F. Gorham, Providence, R. I.
Philip Hadley, Ph. D., Professor of Bacteriology and Director of Laboratories, R. I. State College, Kingston.
- A. W. Hedrich, Boston, Mass.
Dorothy W. Caldwell, Rhode Island State College, Kingston.

WASHINGTON

- Professor T. J. Murray, Pullman.
W. D. Hofman, M. D. V., Portland, Ore.

CANADA

- A. J. Douglas, M. D., Winnipeg, Manitoba.
Mrs. W. J. T. Watt, City Health Department, Winnipeg, Manitoba.

HAWAII

- C. Charlock, Hilo.
Alfred G. Souza, Assistant to Board of Health Pathologist, Hilo.

If you have not already sent in your member,
Bring him with you to San Francisco!

PERCENTAGES OF QUOTAS FILLED TO MONDAY NOON, AUGUST 9, 1920

TOTAL NUMBER OF MEMBERS RECEIVED TO
DATE, 1,751. or 58% OF QUOTA

	Percentage of quota filled		Percentage of quota filled
Utah	472	Massachusetts	65
New Mexico	336	Oklahoma	53
North Carolina	285	Iowa	53
California	174	Missouri	51
Saskatchewan	142	Delaware	50
Colorado	142	New York	47
Idaho	125	Wisconsin	46
Florida	123	West Virginia	43
Maine	117	New Jersey	40
Maryland and D. C.	112	Manitoba	36
Montana	110	Tennessee	30
North Dakota	106	Illinois	29
Nova Scotia	100	New Hampshire	27
Rhode Island	100	Arizona	25
South Dakota	95	South Carolina	25
Connecticut	94	New Brunswick	25
Vermont	88	Nebraska	24
Alabama	78	Indiana	24
Minnesota	72	Virginia	22
Michigan	65	Kansas	20
Ohio	64	Kentucky	17
Arkansas	64	Mississippi	17
Washington	62	Pennsylvania	16
		Texas	14



REPORT OF COMMITTEE ON STATE HEALTH SOCIETIES IN THE UNITED STATES

This report is the result of a letter sent to the national organizations doing health work as one of their principle activities. This letter asked the national societies for a list of states in which there were state societies organized by them or affiliated with them. After the replies to these letters had been received a list of the state societies in each state according to the information furnished by the national society was supplied to the health officer of the state for criticisms, comments, additions and subtractions. We admit that the list is not complete, but it is more nearly so than any other of which we know. Since new societies are being organized from time to

time, a list dated March 1st would not embrace all the societies in existence on September 1st.

The information gathered from the two sources is tabulated in Table 1.

In the list of national societies there are 24 names. Three of these—the Conference of Social Agencies, the National Woman's Federation and the Malaria Conference—were designated by one or more state health officers and are therefore included in the list, though they do not belong there.

This table shows that the number of state health societies runs from 2 in Wyoming to 12 in Maryland. In 24 states there are more than 6. In all there are 316 state health

societies, including those of the District of Columbia. Some of these are separate organizations and some are sections or activities of other organizations such as the state medical society.

Three of the national organizations have attempted to form local rather than state organizations. These three organizations—the American Social Hygiene, National Safety Council and the American Child Hygiene—have 106 locals.

This is an average of about $6\frac{1}{2}$ societies and $2\frac{2}{3}$ locals per state.

On the one hand I am sure there are some health societies not listed. There are health societies in the list which have only a paper organization and some which exist on paper only. Several state health officers have written that certain state health societies on the lists sent are not active and even that some have no existence. Attention is called to these by a footnote to Table 1. This criticism is true in the main, but it is not entitled to the weight which might be given it.

With the exception of those organizations where a large annual meeting is an essential activity a society may be doing very effective work without having a large popular membership or a considerable organization or a convention of importance. For example, certain very active and effective national propaganda organizations have only nominal annual meetings with only a small attendance and only a small or a loosely tied membership.

Such points as this will be discussed more in detail later in this report.

Three of the states have two state health societies each, though one of these, New Mexico, has in addition three locals of the American Child Hygiene Association. Ten have four each. Eight have five societies each, three of these, West Virginia, Minnesota and Washington, having locals of other organizations in addition. The rather misplaced position of Minnesota in this scale is due to the development of various health society activities as sections of the Minnesota Public Health Association. Four have six societies each, Ohio having locals in addition. Eight have seven societies each, Iowa, Maine, Missouri, Montana, Nebraska and Wisconsin having locals in addition. Five have eight each, and of

the five Kentucky and Oregon have locals in addition. Four states have nine societies each and all except Kansas have locals in addition. Four states have ten each and each has locals in addition. Two have eleven each and both have locals in addition. One has twelve and locals in addition.

This is enough to make out a *prima facie* case for some kind of co-operation, affiliation, federation or amalgamation.

In Table 2 we attempt some kind of an analysis and grouping of the various national organizations. The American Public Health Association holds a large annual convention for the discussion of technical subjects, to educate and train those in attendance and to promote the interests of the organization and its members. It maintains a technical journal and it does propaganda work. It meets by itself except that one or more organizations, some well organized, others less so, meet with it. It organizes state health societies. Its membership is composed of health officers, sociologists, laboratory workers, statisticians, sanitary engineers, industrial hygienists and physicians, laymen and corporations interested in preventive medicine. Its work belongs to three types—education, propaganda, organization.

The American Medical Association holds a large annual convention for the discussion of technical subjects to educate and train those in attendance and to promote the interests of the organization and its members. It maintains a technical journal and does propaganda work. It meets by itself, though many organizations, some well organized, some less so, meet in the same city at or near the same date. It has a section on preventive medicine, though in the main its members are physicians engaged in the practice of medicine. It has a state medical society in each state and most of these have sections on preventive medicine. Most counties have county medical societies in affiliation with their state societies.

The American Red Cross does not have a large annual convention. It is difficult just at this time to classify its activities. It does not attempt to organize state societies, but does organize locals and group these into district organizations.

The National Tuberculosis Society holds a large annual convention for the discus-

sion of technical subjects to educate and train those in attendance, and to promote the interests of the organization and its members. It maintains a technical journal and a popular journal and does propaganda work. In addition it holds regional meetings. It promotes the organization of state societies, some of which in recent years have taken the name public health societies. In some states these state societies have fairly large conventions, in others the annual meeting is only a nominal meeting. The National society meets by itself.

The State and Provincial Boards of Health meet with the Surgeon-General of the U. S. Public Health Service, and also by itself. They discuss technical subjects and organization matters. They are in close touch with the meetings of local and state health officers.

The National Child Hygiene Association has a large annual meeting for the discussion of technical subjects to educate and

train those in attendance and to promote the interests of the organization and its members. It does propaganda work. It meets alone. Generally speaking, it organizes or affiliates local child hygiene societies and makes no attempt to organize state societies.

The American Social Hygiene Society holds a small annual meeting for the transaction of organization business. It maintains several publications. It is essentially a propaganda organization. It has organized a few local societies and has recently begun organizing state societies. None of these attempt popular annual meetings.

The Mental Hygiene Society holds a small meeting for the transaction of organization business. It does propaganda work. It maintains a periodical and issues other publications. It meets alone. It has organized a few state health societies, but these are propaganda organizations and none attempt large annual conventions.

TABLE 1

	Public Health Society A. P. H. A. Plan	State Medical	Tuberculosis	Parent Teachers	Blindness	Mental Hygiene	Physical Education	Health Officers	Nurses	Cancer	Social Hygiene	Safety Council	Industrial P. & S.	Child Hygiene	Sanitary Engineers	Women's Clubs	Miscellaneous	Summary
Alabama	0	+	+	+	0	+	0	+	0	0	0	0	0	0	0	.....	5	
Arkansas	0	+	+	0	+	0	+	0	0	0	0	0	0	0	0	.....	4	
Arizona	0	+	+	+	0	0	0	+	0	0	0	0	0	0	0	.....	4	
California	0	+	+	+	+	+	+	+	+	+	0 ²	0 ¹²	0	0 ²¹	0	.....	+¹¹	10+6 locals
Connecticut	+	+	+	+	+	+	+	0	+	0	+	0 ¹³	0	0 ²⁷	0	.....	9+5 locals	
Delaware	+	+	+	+	+	0	0	0	0	0	0	+	0	0	0	.....	6	
District of Columbia	0	+	+	+	0	+	0	+	0	+	0	0	+	0	0	.....	7	
Florida	0	+	+	0	0	0	+	0	0	+	0	0	0	0	0	.....	4	
Georgia	0	+	+	+	0	+	+	+	0	+	0	0	0	0	0	.....	7	
Idaho	0	+	+	+	0	0	+	0	0	0	0	0	0	0	0	.....	4	
Colorado	0	+	+	+	0	0	0	0	+	+	0	0	0	0	0	.....	5	
Illinois	0	+	+	+	+	+	+	+	+	0	+	0 ¹	+	0 ²²	+	.....	11+7 locals	
Indiana	0 ²	+	+	+	0	+	+	+	+	+	0	0 ¹⁴	0	+	0	.....	+³⁰	10+2 locals
Iowa	0	+	+	+	+	+	+	0	+	0	0	0	0	0 ²²	0	.....	7+2 locals	
Kansas	+	+	+	+	0	+	+	+	+	0	0	0	0	0	+	.....	9	
Kentucky	+	+	+	+	0	0	0	0	+	+	0 ⁹	0	0	0 ²²	+	.....	8+3 locals	
Louisiana	0	+	+	+	+	+	+	0	+	+	0	0	0 ¹	0 ²¹	+	.....	+²⁰	10+1 local
Maine	0	+	+	+	0	+	+	0	+	+	0	0	0	0 ²²	0	.....	7+2 locals	
Maryland	+	+	+	+	+	+	+	+	+	+	+	0 ¹³	0	+	0	.....	12+1 local	

TABLE I—Continued

	Public Health Society A. P. H. A. Plan	State Medical	Tuberculosis	Parent Teachers	Blindness	Mental Hygiene	Physical Education	Health Officers	Nurses	Cancer	Social Hygiene	Safety Council	Industrial P. & S.	Child Hygiene	Sanitary Engineers	Women's Clubs	Miscellaneous	Summary			
Massachusetts.....	0	+	+	+	+	+	+	+	+	+	+	0 ¹⁴	0	0 ²²	+	...	...	11+11 locals	
Michigan.....	+	+	+	+	+	0	+	0	+	+	+	0 ¹⁴	+	0 ²⁴	0	...	...	10+8 locals	
Minnesota.....	0	+	+	0	0	+	0	+	0	+	0	0	0	0 ²²	0	...	...	5+2 locals	
Mississippi.....	0	+	+	+	0	+	0	+	0	0	+	0 ¹⁴	0	0 ²²	0	...	...	5	
Missouri.....	0	+	+	+	+	0	+	0	0	+	+	0 ¹⁴	0	0 ²²	0	...	...	7+4 locals	
Montana.....	+	-	+	+	0	0	0	+	+	0	0	0 ¹⁴	0	0 ²¹	+	...	...	7+1 local	
Nebraska.....	0	+	+	0	+	0	+	+	+	+	0	0	0	0	0	...	...	7+1 local	
North Carolina.....	0	+	+	+	0	+	+	+	+	+	0	0	0	0	0	...	...	8	
North Dakota.....	0 ¹	+	+	0	+	0	0	0	+	0	0	0	0	0	0	...	...	4	
New Hampshire.....	0	+	+	+	0	0	0	+	0	0	0	0	0	0 ²³	0	...	...	4	
New Mexico.....	0	+	+	0	0	0	0	0	0	0	0	0	0	0 ²³	0	...	...	2+3 locals	
New Jersey.....	0	+	+	+	+	0	+	+	0	+	0	0	0	0	0	+	...	8			
New York.....	0	+	+	+	+	+	+	+	+	+	0 ¹⁴	0 ¹⁷	0	0 ²²	0	...	...	9+10 locals	
Nevada.....	0	+	+	0	0	0	0	0	0	0	0	0	0	0	0	...	...	2	
Ohio.....	0	+	+	+	0	0	+	0	0	+	0 ⁹	0 ¹⁶	+	0	0	...	...	6+5 locals	
Oklahoma.....	0	+	+	0	0	0	+	0	0	0	+	+	+	0	0 ²¹	0	...	8+2 locals			
Oregon.....	0	+	+	+	0	+	0	+	0	+	0	0 ¹⁸	+	0	0	...	...	9+7 locals	
Pennsylvania.....	0	+	+	+	+	+	+	0	+	0	0	0	0	0	0	...	...	6....	
Rhode Island.....	0	+	+	+	0	+	+	0	+	0	+	0	0	0	0	...	...	4	
South Carolina.....	0	+	+	0	0	0	0	0	+	0	+	0	0	0	0	...	...	4	
South Dakota.....	0	+	+	+	0	0	0	0	+	0	0	0 ¹²	0	0	+	0 ²⁷	0	8			
Tennessee.....	0	+	+	+	0	+	+	+	0	+	0 ¹²	0	0	+	0 ²⁷	0	...	5			
Texas.....	0	+	+	+	0	0	0	+	0	0	+	0	0	0	0	...	...	5	
Utah.....	0	+	+	+	0	0	+	0	+	0	0	0	0	0	0	...	...	4	
Vermont.....	0	+	+	+	0	0	0	0	+	0	0	0	0	0	0	...	...	6	
Virginia.....	0	+	+	0	0	+	+	+	0	0	+	0	0	0	0	+	30	5+1 local			
West Virginia.....	0	+	+	0	0	0	0	+	+	0	0	0 ¹³	0	0	0 ²¹	0	...	5+6 locals			
Washington.....	0	+	+	+	0	0	+	0	+	0	0 ⁹	0 ¹⁷	0	0	0	...	...	7+4 locals	
Wisconsin.....	0	+	+	+	0	0	0	0	0	0	0	0	0	0	0	...	...	2	
Wyoming.....	0	+	+	0	0	0	0	0	0	0	0	0	0	0	0	8	3	1			
Summary.....	7	49	49	47	18	22	29	23	28	21	11	19	2	20	4	29	4	29	8	3	1

1—H. A. doubtful. 2—Attempt to organize being made. 3—Same as 2. 4—8 of these are known as Public Health Society. 5—Activity questioned by State Health Officer. 6—Said by H. O. to be inactive. 7—One local. 8—Several locals. 9—One local. 10—Several locals. 11—2 locals. 12—Known as White Shield. 13—1 local. 14—2 locals. 15—3 locals. 16—4 locals. 17—5 locals. 18—7 locals. 19—8 locals. 20—13 locals. 21—1 local. 22—2 locals. 23—3 locals. 24—6 locals. 25—8 locals. 26—14 locals. 27—Questioned by State H. O. 28—54 locals. 29—Mentioned by State H. O. 30—Health League.

TABLE II.

	Type of Annual Meeting	Principal Activities	Publications	Annual Meeting	Plan of Organization	Plans for Future	Number of State Societies	Do State Societies Hold Conventions
American Public Health Association.....	Large Convention..	Organization, Education, Propaganda.....	Technical Journal, News Letter, Miscellaneous.....	A few organizations meet with A. P. H. A.....	National, state and local health societies.....	Health Society in each state.....	7.....	Nominal mostly.
American Medical Association.....	Large Convention..	Organization, Education, Propaganda.....	Technical Journal and many other publications.....	Many organizations meet with A.M.A.....	At present, organization in each state.....	At present, organization in each state.....	49.....	Yes. Well attended
American Red Cross.....	Small meeting for business purposes.	Cannot classify.....	Red Cross Magazine and others.....	.....	Regional and local organization.....	.....	.....	.....
National Tuberculosis.....	Large Convention..	Organization, Education, Propaganda.....	Technical Journal, Popular Journal, and other publications.....	Alone.....	National, regional, and state.....	Organization in each state now.....	40 and independent local societies in several states.....	A few large meetings Mostly nominal.
State and Provincial Boards of Health..	Convention.....	Conference, Education.....	None, unless we count state bulletins.....	Met with U.S.P.H.S. once a year at least.....	National.....	.....	22 state societies of health officers.....	Yes.
American Child Hygiene Association.....	Convention.....	Education, Propaganda.....	Transactions.....	Generally none.....	National, a few state many local.....	Organizing state societies.....	1 and 34 locals.....	Nominal.
American Social Hygiene.....	Small meeting for business purposes.	Propaganda.....	Several.....	Alone.....	National, a few state several local.....	Organizing state societies.....	11 and 8 locals.....	Nominal.
National Committee for Mental Hygiene.	Small meeting for business purposes.	Propaganda.....	Journal and Miscellaneous.....	Alone.....	National, a few state a few local.....	.....	22.....	Nominal.
American Society for the Control of.....	Small meeting for business purposes.	Propaganda.....	Miscellaneous.....	Alone.....	National, a few state.....	.....	21.....	Nominal.
National Committee for Prevention of.....	Small meeting for business purposes.	Propaganda.....	Miscellaneous.....	Alone.....	National, a few state.....	.....	13.....	Nominal.
American Pastors League.....	Small meeting for business purposes.	Propaganda.....	Miscellaneous.....	Alone.....	National only.....	.....	Nene.....	.....
National Organization for Public Health Nursing.....	Large convention....	Organization, Education.....	.....	Alone.....	National and a few state.....	.....	23. 11 of these are sections of nurses' society.....	.....
Parent-Teachers Association.....	Convention.....	Education.....	.....	Alone.....	National and state.....	.....	37.....	Nominal.
American Physical Education Association.	Large Convention..	Organization, Education.....	Journal.....	Alone.....	National and state.....	.....	29.....	.....
National Safety Council.....	Large Convention..	Organization, Propaganda, Education.....	Miscellaneous.....	Alone.....	National and in industrial centers.....	Organizing in industrial centers.....	2 state and 43 locals.....	Well attended.
American Association of Industrial Physicians and Surgeons.....	Convention.....	Organization, Education.....	.....	Meets with A.M.A.....	National and a few state.....	Organizing state societies.....	1.....	Fair attendance.

TABLE II.—Continued

	Type of Annual Meeting	Principal Activities	Publications	Annual Meeting	Plan of Organization	Plans for Future	Number of State Societies	Do State Societies Hold Conventions
Conference of Social Agencies.....	Large Convention..	Organization, Education.....	.....	Alone.....	National and state..	.....	.....	.....
National Federation of Women's Clubs..	Large Convention..	.....	.....	.....	.....	.....	.....	.....
Society of Sanitary Engineers.....	Convention.....	Education, Propaganda.....	.....	Meets with Southern Medical.....	National.....	.....	8.....	.....
Malaria Conference.....	.....	.....	.....	.....	.....	.....	.....	.....
American School Hygiene Association.....	Convention.....	Organization, Education.....	.....	Meets with N. E. A. National.....	National.....	.....	.....	.....
National Child Welfare.....	Small meeting for business purposes.....	Propaganda, Education.....	Miscellaneous.....	Alone.....	National.....	.....	.....	.....
Association Medical Milk Commissions.....	.....	.....	Sometimes; Transactions.....	Meets with A. P. H. A. National and local.....	National and local.....	.....	.....	.....
Nutritional Clinics for Delicate Children.....	Small meeting for business purposes.....	Propaganda.....	Miscellaneous.....	Alone.....	National.....	.....	.....	.....

The American Society for the Control of Cancer holds a small annual meeting for the transaction of organization business. It meets alone. It is essentially a propaganda organization. It issues pamphlets, but no journal. It has organized a few state societies, but these do not attempt large annual meetings and are essentially propaganda organizations.

The Society for the Prevention of Blindness. The analysis of the Society for the Prevention of Blindness is the same as that for the Prevention of Cancer. A few of the locals employ paid workers.

The American Posture League, is the same type of society as the Society for Mental Hygiene, except that the Posture League makes no attempt to organize local or state societies, being exclusively a propaganda group making no effort at organizing and not furnishing a forum for discussion of technical subjects.

The National Association for Public Health Nursing holds a large annual convention to discuss technical subjects and to promote the interests of the organization and its workers. It meets by itself. It uses the Journal of the Nurses' Association. In 16 of the 29 states having a state nurses' organization the organization is known as a public health nurses' society, while in 13 it is a section of the state nurses' society.

The Parent-Teachers' Association holds an annual convention to discuss technical subjects and to promote the interests of the organization and its members. Their national affiliation is with the national, state and local teachers' association. They issue what might be termed a year book.

The American Physical Education Association holds a large annual convention to discuss technical subjects, to educate and train those in attendance and to promote the interests of the organization and its members. It meets alone. Its membership is closely in touch with schools, teachers, gymnasiums and playgrounds and their employees. It issues a journal and does some propaganda work.

The National Safety Council holds a large annual convention for the discussion of technical subjects, to educate and train those in attendance and to promote the interests of the organization and its mem-

bers. It meets alone. Its membership is more closely in touch with the industries and with the industrial hygienists. Its work is essentially propaganda in type. It organizes locals and state societies in some instances. Occasionally these subsidiary societies hold mass meetings. The membership of this organization is of the corporate type, in the main.

The Association of Industrial Physicians and Surgeons hold an annual convention to discuss technical subjects, to educate and train those in attendance and to promote the interests of the organization and its members. It meets with the American Medical Association. Its activities in the main are educational and organization in type. They are launching a campaign to organize state societies to meet with the state medical.

The Conference of Social Agencies hold a large annual convention. They have a section on Public Health. Many societies meet at the same time in the same place as does this conference. Their membership is drawn in the main from sociologists and social workers.

The American School Hygiene Association holds a large annual convention to discuss technical subjects, to educate and train those in attendance and to promote the interests of the organization and its members. It meets with the National Education Association, Department of Superintendents. Its work in the main is educational.

The Federation of Women's Clubs has a section on public health. It organizes state federations and each of these has a health section. Its main functions are organization and education. Health is not one of its principal activities. The national has a large biennial convention. The state federations have annual conventions.

We have not learned whether there is a national association of sanitary engineers.

The Malaria Conference meets with the Southern Medical Association.

As to annual meetings we find that 14 hold large (more or less) annual meetings. Four or five have more than a thousand in attendance at a normal meeting. Seven hold small annual meetings for the transaction of business only. The remainder we cannot classify.

We group five as doing propaganda work only and five as doing propaganda work along with other work. Six are classed as doing organization work, three in conjunction with propaganda and education work and three with education work but not propaganda work. However, the line between education work and propaganda work is not always easily maintained. Several we are unable to classify.

Three issue technical journals, one issues transactions, three issue journals somewhat popular in type. The miscellaneous publications are numerous.

Fourteen of the organizations meet alone. One meets with the N. E. A., one with the Southern Medical, one with the A. M. A., one with the A. P. H. A. and one with the U. S. P. H. S. at least once a year.

Concerning organization as to locations, seven are given as national and state, three national only, one national and regional, one national, regional and state, one national, a few state and many locals two, national, and a few state three. Principally in industrial centers one, unclassified several. The answers to "Do state societies hold annual conventions?" are: Yes, 4; nominal, 9; No, 1. Several cannot be classified.

An interesting item relates to the natural affiliations of the bulk of the membership of several of the organizations.

PETER H. BRYCE, M.D.

C. J. HASTINGS, M.D.

W. A. EVANS, M.D., *Chairman.*



EXHIBITS AT THE SAN FRANCISCO MEETING

In the past few years in increasing measure the exhibits at the Annual Meetings of the Association have been of value to health officers, who have been able through them

to keep in touch with the most recent improvements in methods and equipment. At San Francisco, despite the handicap of distance and the uncertainty of railway freight

deliveries, the exhibits are important. Below are noted some of the special features that will be shown.



BAUSCH & LOMB OPTICAL COMPANY OF SAN FRANCISCO, CALIF., AND ROCHESTER, N. Y.

Visitors to Section 4 will have the opportunity of examining the new colorimeter recently added to the B. & L. line; also microscopes and accessories, microtomes, and photomicrographic and projection apparatus all of the superior quality that distinguishes the products of these pioneer makers of optical goods.



HORLICK'S MALTED MILK COMPANY, RACINE, WISCONSIN

The exhibit of this company will occupy Booth 30, where a representative will be in attendance to distribute literature and answer all inquiries concerning the many dietetic uses of the well-known and reliable "Horlick's" products. The exhibit will include "Horlick's"—the *original* Malted Milk, in powder and tablet form, Horlick's Food and Horlick's Diastoid—products perfected by the experience of over a third of a century that are extensively endorsed by the medical profession, dietitians and health and food experts generally, because of their quality and advantages in the feeding of infants, invalids and convalescents.



FRED L. LACHENBACH BIOLOGIC DEPT

This San Francisco firm will install a special exhibit devoted to the most approved methods for the administration of Arsphenamine and Neosarsphenamine; will exhibit also an interesting line of serums, vaccines and viruses in collaboration with the Gilliland Laboratories of Marietta and Ambler, Pa.

At this exhibit also will be found the Red Cross First Aid Emergency Kit which is admirably adapted to the needs of automobilists and travelers. The price of the kit is \$1.00. Mr. Lachenbach is interested in bringing these kits to the attention of the public.



LYONS SANITARY URN COMPANY, INC.

Lyons Sanitary Milk Urn is the only urn that dispenses milk containing the proper percentage of cream in each and every glass served, without any mixing, stirring, or other agitating mechanism, and it makes no difference whether the milk remains in the urn 2 minutes or 24 hours. Place the day's supply

of milk in the urn and draw it out through the faucet as you need it, and the milk will always be sweet, clean, cold, and fresh.



METROPOLITAN LIFE INSURANCE COMPANY

The Metropolitan exhibit consists of a screen of illuminated photographs on glass depicting the Company's health conservation work for policy-holders and employees. The actual bedside work of the visiting nurse is shown on the left half of the screen. There are also illustrations of the instructive work of the nurses, and of the agents, in hygiene. The Company's educational literature on the prevention of illness will also be shown and copies distributed.

The actual work of medical examination, dispensary care, dental care, luncheon service, building sanitation carried out by the Company in its Home Office, constitutes the right half of this illuminated screen.

Two floor stands of six charts each, illustrate the effect of life conservation work upon the total death rate of insured wage earners, the downward course of tuberculosis mortality, the extent to which typhoid fever is being eliminated as a cause of death, the trend of mortality of insured children in comparison with the general population of the United States, and the course of mortality in adult and after middle life. Three graphic charts of Visiting Nurse Service statistics will be shown. Three problems immediately facing the American public health movement are shown in charts—accident mortality, mortality in childbirth, and diseases of the heart.



SPENCER LENS COMPANY

The exhibit of the Spencer Lens Company will consist of microscopes, microtomes, micro lamps, mechanical stages, delineascopes and various accessories for microscope and microtome work. Among the instruments shown will be the new high power Mon-Objective Binoocular Microscope No. 2 H, with the distinctive feature of *convergent eyepiece tubes*, which the Company claims completely avoids the excessive and false conception of perspective usually produced. There will also be shown the Standard Clinical Microscope No. 44 H, with No. 485 mechanical stage, which may be fitted to any square stage microscope. Among the microtomes shown will be the Rotary No. 820 made with an inclined plane feed (the only Rotary Microtome ever made on this plan), which entirely overcomes the

inaccuracies usually encountered due to the up-and-down movement of the object. This microtome has gained an international reputation. The exhibit will also display samples of optical glass from the Spencer factory at Hamburg, N. Y., where 42 different types of optical glass are now made. This industry grew up during the war and played an important part in winning it.



H. A. METZ LABORATORIES, INC.

Salvarsan (Arsphenamine-Metz) and Neosalvarsan (Neoarsphenamine - Metz), Novocain (Procaine-Metz), Pyramidon, Parathesin and Holocain, all passed by the Council on Pharmacy & Chemistry, of the American Medical Association, will be exhibited in Section 10, Exhibit Hall, by H. A. Metz Laboratories, Inc., 122 Hudson Street, New York.

The technic of the preparation of solutions of Salvarsan and Neosalvarsan will be demonstrated by chemists from our laboratories.

Salvarsan is recognized by syphilologists as being the most important therapeutic weapon at their command, and in view of the campaign against the venereal peril now under way, this exposition should prove of decided interest to all physicians who are working in the field of public health.



TAYLOR INSTRUMENT COMPANIES

Taylor Instrument Companies are displaying at Section 3 their new office type Tycos Sphygmomanometer. This instrument gives a very fine open reading and permits observa-

tions of detail that cannot be observed on smaller instruments.

In addition to the above, special circulars giving carefully prepared instructions for morning and evening baths are distributed.

The sedative values of water within narrow limits and influence upon the human body, make very interesting reading matter, as well as being exceedingly valuable.

There is also on exhibition the Pocket Sling Psychrometer, a convenient instrument for determining moisture conditions in homes, schools, office, factories, etc.



U. S. NAVAL MEDICAL SUPPLY DEPOT

The exhibit of this Depot consists of a complete Navy Standard dental outfit, finished in white enamel, such as is now used in the hospital ships of the Navy. A dental officer will be present at all times to give such information as may be desired concerning use of the equipment and general duties of a dental officer aboard ship.

S. S. WHITE DENTAL MFG. CO.

The introductory installation of the Combination C, comprising the S. S. White Equipment Stand No. 3 and the Diamond Chair, was made in the Thos. W. Evans Museum and Dental Institute. Since then, a number of dental colleges and public institutions have installed this type of dental equipment. The essentials of design and construction which met with the unqualified approval in the original installation have made for the permanent success of the outfit.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Child Welfare Expense.—To convince the New Jersey taxpayers of the important uses made of their money and of the low cost of preserving life, it has been computed that the Child Hygiene Bureau's work costs about \$1.20 for each individual cared for, on the basis of 100 mothers and 1,500 babies per district nurse, at a cost of \$2,050. The work covers all counties, although not all of the 70,000 mothers, 70,000 infants born, 350,000 children of preschool age, or 650,000 children of school age are under supervision.



STATE HEALTH NOTES—GENERAL

Alabama.—In a report to the recent Conference of State and Territorial Health

Officers, Surgeon L. L. Lumsden, of the U. S. Public Health Service, states that "only about six percent of the rural population of the United States (January 1, 1920) is provided with whole-time local health service of any kind whatsoever." Between 30 percent and 35 percent of the rural population of Alabama is served by full-time local health workers.

Alabama has sixty-seven counties. In 14 of these, 20.9 percent of the total number, a full-time health officer is on active duty. In eight of these counties, units consisting of health officer, one or more inspectors, one or more nurses, and a laboratory diagnostician are maintained. In 11 of them regu-

lar inspection service is conducted as a phase of the health activities.

The University of Alabama has established courses in hygiene preparing its graduates to teach hygiene and health conservation in the higher institutions.

Arkansas.—At the annual meeting of the Arkansas Medical Society at Eureka Springs in June, Dr. Gus A. Warren, Black Rock, was elected President and Dr. William R. Bathurst, Little Rock, re-elected Secretary and Editor of the *Journal of the Arkansas Medical Society*. Hot Springs was selected as the place of meeting for 1921.



W. M. DICKIE, M. D.,
Newly Appointed State Health Officer
of California

California.—The State Board of Health has begun the issue of a weekly *Public Health News*, a mimeographed bulletin devoted to various health education matters, together with a communicable disease report. In the first issue plague and rabies are described and it is noted that the State grants by law an annual leave of 15 working days to everyone in its employ. Attention is called to the fact that the taxpayer pays the cost of the care of the feeble-minded and inferior individuals, and that he has the right to say whether his tax money shall be spent in prevention or in care, whether the State shall deal with causes or effects.

Connecticut.—In response to a public demand for an extension of the state program for venereal disease control, it has been necessary for the State Board of Health to establish three new treatment stations—at Willimantic, Meriden and Naugatuck, in addition to the six clinics previously in operation.

The city of New Haven opened on July 9 its local health center, which is to carry out a complete health program for the district in which it is situated in coöperation with local agencies.

Florida.—The State Board of Health is endeavoring to establish a venereal disease clinic in every county in the state. Ten are now in operation in addition to the ambulatory one.

The State Health Officer has had an interesting experience in reading the opinions of various "experts" during the recent plague outbreak at Pensacola. Here are some of the suggestions:

"Doctor, is it true that the fumigators asphyxiated a baby yesterday?"

"Doctor, at what hour will they burn the building containing the body of the plague victim?"

Prominent, but prejudiced citizen: "This plague scare is the biggest money graft I ever heard of."

Another enlightened educator: "This ain't no plague, it is nothing but blue-balls. These here doctors can't tell the difference between pox germs and plague germs."

Excited lady: "There is a ship coming into the harbor that has the bodies of three hundred people on board; they all died of plague." (Note.—No passenger boats enter the harbor of Pensacola, except small coast-wise steamers.)

Sagacious Citizen, pencil in hand, demonstrating his opinion to eager throng: "This is the way the plague germ looks under the microscope (drawing as follows: '\$')."

Elderly boatman: "Dock, if I had been in your place, I'da jest planted that guy and said nothing about his having died of plague."

Indiana.—The State Board of Health has established 20 venereal disease clinics in the state; and the average daily attendance is 100. 4,801 doses of arsphenamine were administered during the quarter ending June

30. 17 addresses and lectures were given in the quarter named, all of them illustrated with films and slides. The average attendance at these lectures was 274. During the fiscal year ending June 30, 1920, 7,688 cases of venereal diseases were treated, 11,481 Wassermann tests were made and 211,997 treatments given. Number of cases of venereal disease discharged from clinics as cured, 2,210. Average cost per cured case, based on state appropriation, \$13.05.

The sanitary engineering department of the State Board during the quarter ending June 30, 1920, examined 279 public water supplies, 255 private water supplies, making a total of 534. Only 56 percent of these samples of water examined were found unsaleable.

Trachoma is becoming a problem in Indiana, as inspection has discovered the disease practically present in every one of the 92 counties. The State Board has ordered the executive to organize the health officers in opposition to this infection.

At the last meeting of the State Board, 21 schoolhouses were condemned because of being insanitary and unfit for school purposes, and new ones ordered.

Maine.—A state clinic for physicians which will be devoted to the diagnosis of tuberculosis with special lectures and laboratory demonstrations on cancer and venereal diseases is announced for August 2-6, inclusive, to be held at Fairfield Sanatorium. This clinic, which is the first of its kind ever to be held in Maine, has been arranged by the Maine Public Health Association, in coöperation with the Maine Department of Health and the Maine Tuberculosis Sanatorium Trustees. Laboratory and X-ray demonstrations are scheduled for each morning, a course in physical diagnosis will be given in the afternoons and there will be technical lectures by prominent New England authorities.

Tuberculosis is on the decrease in Maine. Last year was marked by a lessening death rate for nearly all communicable diseases, and the total for tuberculosis was 786—638 of the pulmonary type. The figure for 1892, the year when the state was admitted into the registration area, 1,513 of which 1,352 were pulmonary, will serve for comparison, showing the notable decrease.

Dr. L. D. Bristol, State Commissioner of Health, has issued a warning to the

seaport towns of Maine to be on their guard against the entrance of bubonic plague. There is some opportunity for this on account of very large amount of shipping coming into Maine harbors. Municipal authorities in the state are urged to give attention to ratproof construction and the extermination of the rat.

Michigan.—The Michigan Department of Health is conducting a series of clinics for the residents of Drummond Island, most of whom are Indians. The clinics, giving particular attention to tuberculosis and child hygiene, will be conducted under the direction of Dr. Kenneth Noble and a corps of nurses.

The new laboratory truck equipped by the Michigan Department of Health to test milk and water supplies and inspect waste disposal in Michigan summer resorts started its tour of the state July 15th. Demonstrations were given to the students at the University of Michigan and at the Michigan State Normal College before it visited Jackson county and Lake Michigan resorts.

Detroit, Mich.—After nine months' trial of the health center plan, certain changes are to be put into effect which experience has indicated to be practicable. The Delray district, which is that in which the preliminary tests have been made, has a population of more than 100,000 in an area of six square miles. It has been found that a single health center for the whole district is not practicable in Detroit. There will therefore be established a central office which is to serve as headquarters for the force of nurses, and to house the tuberculosis and general diagnostic clinics. It seems not practicable to locate the baby clinic and the prenatal one here, for they should be within walking distance of the mothers. Three clinics are to be established in school buildings within the populous sections. A further improvement is to relate the district medical inspector to one of the hospitals for experience in diagnostic work.

On the basis of a population of 994,000, the appropriation for the Detroit Health Department is \$1.03 per capita. The distribution of this budget by activities is the following: Administration, 6.5 cents; sanitary engineering, 6.4 cents; records and accounts, including vital statistics, 3.7 cents;

food inspection, 7.3 cents; laboratories, 4.2 cents; hospitals, 31.3 cents; medical service supervision, 1.8 cents; tuberculosis, 7.1 cents; contagious disease, 9.3 cents; venereal disease, 2.9 cents; infant welfare, 8.0 cents; school inspection, 11.7 cents; dental inspection, 2.5 cents.

An interesting sidelight on the efficiency of disease reporting at times of an influenza epidemic is furnished by the situation in Detroit from January 20th to March 8th of this year. Approximately 12,000 cases of influenza and pneumonia were reported to the Health Department during this period. Of this number, 854 died, or about 7 percent. There also died during this same period from influenza or pneumonia associated with influenza, 1,302 people whose illness was never reported to the Health Department. There were 14 known cases to every death. At this ratio, the 1,302 deaths represent 18,000 cases. On this basis, Detroit had 30,000 cases of influenza and pneumonia in January and February—12,000 reported and 18,000 not reported.

Montana.—The second annual meeting of the Montana Public Health Association at Helena, July 12 and 13, set forth a very ambitious program. There were 24 addresses, 34 papers, most of them followed by discussion, a number of round table talks, the showing of films and the consideration of business matters. Six sections held synchronous sessions with general sessions and joint meetings, together with a "get-together luncheon" and a reception, and the exhibition of health films. Among the distinguished visitors who spoke were Governor Stewart, S. C. Ford, State Attorney General, Surgeon General H. S. Cumming, U. S. P. H. S., and I. A. Hayne, Commissioner of Health of South Carolina.

Minnesota.—The State Board of Health has undertaken a campaign of information to the physicians of the state with reference to the use of the facilities furnished by the state in cooperation with the U. S. Public Health Service in the securing of Wassermann tests. Elaborate and definite instructions have been issued, and a warning is given that physicians must not make a charge for the work which the state does for nothing. In the months of April, May and June, 1920, the State Laboratory reported on a total of 3,100 Wassermanns, with a positive percentage of 12.6.

New York.—The State Department of Health has recently organized in the state two group consultation clinics based on the Mayo plan, whereby a group of specialists are brought together to assist local physicians in difficult diagnoses. This plan was the outcome of the shortage of medical assistance in rural communities. It practically gives such localities the facilities of the large cities.

To date, two clinics have already been conducted, and from the keen interest which physicians and the public have shown and the results which have been obtained, this undertaking promises to be an important measure in health conservation. In order to make the clinic a comprehensive one and to give it state-wide recognition, several state departments combined with the State Health Department, namely, the State Department of Education, the State Hospital Commission, the Commission for Feeble Minded, the State Charities Aid Association and the American Red Cross. The clinics have been in direct charge of Dr. E. C. Boddy, Sanitary Supervisor. Both clinics were held in typical rural communities, the first in Livingston County on June 8, 9 and 10, in the town hall, and the second in Chenango County on June 29, 30 and July 1, in the High School building.

In the preliminary organization a group of public health nurses under the supervision of Miss Mathilde S. Kuhlman traveled about the county visiting physicians, explaining to them the object of the clinic and inviting them to bring or send their difficult cases. Permission was also asked of the doctors to visit their patients and to invite them to the clinic. Cases known to the various state departments furnished leads upon which to work, and these cases, too, were invited to attend. Publicity was given to the clinics through newspapers, posters, clergy, grangers' meetings, etc.

The following departments of medicine, surgery and dentistry were represented: pediatrics, school hygiene, internal medicine, mental and nervous diseases, venereal diseases, orthopedics, prenatal care and gynecology, diseases in the chest, laboratories, X-ray, and dentistry.

The keynote of the whole undertaking is cooperation, which was ably demonstrated between the clinic staff, local physicians and local health agencies. The local Red Cross

furnished examining tables, screens and conducted a canteen and a motor corps service for the benefit of patients who came from long distances.

A few preliminary results are now available. At the first clinic there was an attendance of 465 with 667 consultations. At the second clinic there was an attendance of 441 with 867 consultations, 221 laboratory examinations and 112 X-rays. The laboratory and the X-ray report, together with the findings on physical examinations, will be sent to each consultant who will then be able to correlate all these findings, make his diagnosis and send this to the patient's physician with suggested treatment and future course of procedure to follow.

Many of the local physicians of the county attended the clinic with their patients and took part in the consultations and were gratified by the advice they received and with the acquisition of the modern advance of the physicians.

The New York Milk Committee has established a Service Bureau as an aid to communities in need of better official control of their milk supplies. The Bureau is the result of a recommendation made by the National Commission on Milk Standards at its meeting held in New York City during the latter part of May. It is the purpose of the Service Bureau to help preach the gospel of clean, safe milk for infants and children by emphasizing throughout the continent the fundamental principles contained in the reports of the National Commission on Milk Standards. The sanitary character of a milk supply is a vital factor in the public health problem of every community and these reports contain suggestions that have been a great help in drafting effective milk legislation in the states of New York, California and all the cities therein, the Local Government Board of England, besides a great many other cities in America.

Through the meetings of this Commission, unanimous reports and recommendations have been obtained. These have been published at various times by the U. S. Public Health Service and furnished to American cities for the first time a basis for uniform standards and grades of milk.

The chief features of the work of this Commission have been as follows: A

standard time and temperature for the pasteurization of milk; the recommendation that all milk be pasteurized excepting milk corresponding to certified milk in character; that milk be graded into at least three grades—A, B and C—according to its sanitary character and that each grade be distinguished by its own label on the final container; a standard method for determining the sanitary character of milk by the examination for the number of bacteria.

New York City.—A map of the health resources of Manhattan has been made by the Health Service Department of New York County Chapter American Red Cross which has for a distinguishing feature the use of color to indicate the character of activity in the health institution specified.

Types of institutions noted on the map are eight: hospitals, dispensaries of clinics, maternity centers, baby welfare stations, settlements and neighborhood associations which maintain health activities, nursing association headquarters, and health centers. Varied symbols, circles, triangles, squares, rhomboids, are used to indicate the type of institution, and twelve colors are utilized to denote within the symbols the kinds of health work done by the institutions.

Bellevue Hospital with its multifarious activity, involving all twelve colors, is, perhaps, the best example of this method of presenting the problem. The hospital symbol of two concentric circles is divided into twelve differently colored segments, so that with a very little pains the student of the map may learn that Bellevue cares for cancer cases, general and heart cases, contagious and venereal cases, tuberculosis, eye, ear, nose, throat and speech defects, nutritional conditions, child and infant welfare, welfare of women, skin troubles, orthopedic conditions and mental and neurological cases.

North Carolina.—The State Board of Health began the application of the laws requiring physicians to report births. One local doctor has been fined \$45 and another \$50, the latter being a second offense.

"It is the inherent right of every baby born in North Carolina to have its birth promptly and properly registered," declared Dr. F. M. Register, state deputy registrar of vital statistics, in commenting on the prosecutions being instituted by

his division of the state board of health. "In this case the state board of health has extended its activities to the most north-western county of the state. Its arm is long enough to reach across the mountains and say to the doctors and midwives who are derelict in their duty, 'you must treat every baby right, and register its birth.' Failure to comply with the provisions of the law will not be tolerated, and prosecutions will be instituted in all cases of violations, regardless of who may be affected."

In commenting on the recent prosecutions, Dr. W. S. Rankin, State Health Officer, in discussing the principle underlying the legislation which provides penalties for non-reporting, said:

"The laws with regard to the accurate keeping of vital statistics and the prompt reporting of contagious diseases are fundamental in health work. Their enforcement is a duty imposed upon the State Board of Health, and the board intends to continue its policy of making prosecutions when other methods of securing compliance with the law fails."

Nova Scotia.—Nova Scotia has adopted the spectacular feature of great public health caravans. Two of these, planning to tour the province, left the parade in front of the city hall on July 12 at noon. Dean Lloyd of the Anglican Church officially blessed the undertaking, and the cavalcades left the city. Each caravan is equipped with educational motion pictures and lantern slides. The personnel consists of six doctors, a dentist, and a corps of nurses. They will spend six weeks in visiting the coastal and fishing villages most in need of assistance. One of the caravans will move towards the north, along the shore of Minas Basin, skirting the northern coast of the Province, through Antigonish, Cape Breton, and thence to the extreme north of the island—a country rich in historic legend and second to none in Canada for its scenic beauty. The caravan that goes south moves through the historic Evangeline country by Grand Pré to Yarmouth, and thence it will travel along the east coast, ending its trip at Halifax.

These public health caravans are the largest traveling clinics and educational exhibits that have been utilized anywhere in the world, and for Nova Scotia to have

undertaken such a work indicates a great awakening of the public health effort. The plans are those of the Nova Scotia Provincial Branch of the Red Cross Society of Canada, which is in harmony with the peace-time program of the League of Red Cross Societies of the world.

A county health clinic for Hants Co. has been established at Windsor, while V. D. centers have been opened in Sydney, New Glasgow and Yarmouth.

Texas.—On account of the plague situation, the Bureau of Sanitary Engineering of the State Department of Health has been obliged to increase its force to meet the demands for information.

A survey of school children's health, which the public health nurse declares to be typical of the entire state and other states, has recently been completed by Miss Pearl N. Hyer, R. N., public health nurse of the Texas Public Health Association.

Examinations were made of 729 children in a certain North Texas town and 1,656 defects were found—more than two to each child. There were 385 that needed teeth treated, 20 who were over 10 pounds overweight, and 299 who were five pounds or more underweight.

"This survey seems typical of conditions throughout the greater part of Texas," said Miss Hyer, "and examinations show that more than 50 percent of the children have defective teeth, and even more have bad tonsils, while a large number have defective hearing or eyesight.

"Every community needs a public health nurse, so that these defects may be discovered and corrected in youth, and so that the children may grow up into strong, healthy, happy men and women. It is the duty of the people of Texas to provide this health insurance for the citizens of the future."

At the meeting in Austin of the Texas Water Works Association on July 19-20, 1920, most of the communications were related to health. State Health Commissioner C. W. Goddard spoke with reference to "The Importance to Public Health of a Safe Water Supply," while other papers considered Abilene's new reservoir and supply, relations of purity of water to public health, raw water settling basin, copper sulphate treatment and construction of purification plants. The proceedings were

varied by business, election of officers, complimentary luncheons, auto rides about the city, a complimentary swim and a reception.

Virginia.—The State Board of Health has entered into coöperation with counties and communities in order to effect medical and physical inspection and correctional work through the public schools. The sum of \$20,000 has been appropriated for this aid, the condition being that the community shall add to this sum an amount twice as large, the maximum for any one county being \$1,000. Child welfare conferences were held during the week of July 24-31 at five stations in Roanoke County under the

care of Dr. Mary E. Brydon, State Director of Child Welfare. A public health unit has been organized in Albermarle County and in coöperation with the Blue Ridge Sanatorium has established four tuberculosis clinics in the district. In Allegheny County under the auspices of the Virginia Tuberculosis Association a number of successful tuberculosis clinics have been organized. The Farmers' Union Picnic at Lawrenceville was the occasion for raising funds for the employment of a public health nurse for Brunswick County. Rockbridge County likewise has taken steps toward the organization of a county health department.



CONVENTIONS, CONFERENCES, MEETINGS

- September 2-4, Duluth, Minn.—Mississippi Valley Conference on Tuberculosis.
- September 6-7, Omaha, Nebr.—Missouri Valley Medical Society.
- September 7-8, Ogden, Utah—Utah State Medical Association.
- September 7-9, Saratoga Springs, N. Y.—Health Officers of New York.
- September 7-9, Glenwood Springs, Col.—Colorado State Medical Society.
- September 7-10, Holyoke, Mass.—New England Waterworks Association.
- September 8-10, La Crosse, Wis.—Wisconsin State Medical Society.
- September 9, San Francisco, Cal.—California Tuberculosis Association.
- September 9, Cheyenne, Wyo.—Northwestern Tuberculosis Conference.
- September 10-11, San Francisco, Cal.—Southwestern Tuberculosis Conference.
- September 13-17, San Francisco, Cal.—American Public Health Association.
- September 14-15, Springfield, Ill.—Illinois Health Officials and State Department of Public Health.
- September 16-17, Springfield, Ill.—Illinois Health and Welfare Association.
- September 16-17, Tacoma, Wash.—Washington State Medical Association.
- September 20-24, San Francisco, Cal.—International Association of Industrial Accident Boards and Commissioners.
- September 22, South Bend, Ind.—Indiana State Medical Association.
- September 24-October 3, Cleveland, O.—National Safety Council.
- September 29-30, Concord, N. H.—New England Tuberculosis Conference.
- October 2, Lakewood, N. J.—New Jersey Anti-Tuberculosis League.
- October 4-7, Waterloo, Ia.—Tri-State District Medical Society.
- October 4-10, Montreal, Canada—American Association of Occupational Therapy.
- October 4-8, Montreal, Canada—American Hospital Association.
- October 7-8, Augusta, Me.—Maine Public Health Association.
- October 7-8, Rutland, Vt.—Vermont State Medical Society.
- October 9, Ottawa, Canada—Canadian Association for Prevention of Tuberculosis.
- October 11-12, Wilmington, Del.—Delaware State Medical Society.
- October 11-13, St. Louis, Mo.—American Child Hygiene Association.
- October 12-13, Oklahoma City, Okla.—Oklahoma State Public Health Conference.
- October 12-14, Chicago, Ill.—Mississippi Valley Medical Association.
- October 13-15, Chicago, Ill.—Association of Railway Surgeons.
- October 15-16, Roswell, N. M.—New Mexico State Medical Society.
- October 22-26, New York City—American Dietetic Association.
- October 28, Boston, Mass.—Massachusetts Association of Boards of Health.
- November 8-11, Louisville, Ky.—Southern Medical Association.
- November 13, Boston, Mass.—Massachusetts Society for Social Hygiene, Inc.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Promoting Plant Efficiency.—The eight-hour day is not only more efficient than the ten-hour day in industrial plants, but is more economical.

This is the conclusion reached by experts of the United States Public Health Service after a careful detailed study of conditions and production in standard factories of both classes, which has been under way since 1917.

The plants surveyed were selected after a great deal of care. Each is a modern factory, employing such a large number of workers as to make any conclusions reached apply to industry in general. The other consideration was that the machinery, manufactured product and processes in the ten-hour plant should be sufficiently similar to the eight-hour plant to make a comparison fair.

The advantages are all in favor of eight-hour days, or shifts, as compared with the ten-hour day, and relate to maintenance of output, to lost time and to industrial accidents.

Here are the main conclusions summarized:

Maintenance of output: The outstanding feature of the eight-hour day is steady maintenance of output. The outstanding feature of the ten-hour system is the decline of output.

Lost Time: Under the eight-hour system work with almost full power begins and ends approximately on schedule, and lost time is reduced to a minimum. Under the ten-hour system work ceases regularly before the end of the spell and lost time is frequent.

Stereotyped Output: Under the ten-hour system the laborers seem artificially to restrict their efforts and to keep pace with the less efficient workers. Under the eight-hour day the output varies more nearly according to the individual capacity of the laborer.

Industrial Accidents: This phase of the study is of particular interest. Ordinarily accidents may be expected to vary directly with speed of production, owing to increased exposure to risk. But when fatigue is taken into consideration there is a marked modification of this rule. When there is a reduction of output due to fatigue there is an increase in the number of accidents; that is, in the

last hour of the ten or twelve-hour day, in spite of employees slowing up in work, more accidents occur. If for any reason production is speeded up in the last hours, when the laborers are fatigued, the rise in the number of accidents increases so rapidly as to leave no room to doubt that the higher accident risk accompanies the decline in working capacity of the employee.

The full report is contained in *Public Health Bulletin No. 106*, which is the first of a series to be published by the U. S. Public Health Service on the problems of industrial working capacity.

+

Plant Dispensaries and their Equipment.

—Factors which make for good service in factory dispensaries include accessible location, unit arrangement, and agreeable personnel. The writer emphasizes system in the dressing of patients and illustrates the time lost by a nurse in useless trotting to and fro and in the unnecessary expenditure of motions. Charts show daily variations in number of cases for the month of February in a typical plant in Toledo. The modern industrial dispensary is an evolution from the first aid cabinet. The modern plant dispensary has become the industrial clinic. The location is the first element in prompt service, the proper arrangement the second element. A design is shown for the plan of a typical industrial dispensary.—C. D. Selby, *Hospital Management*, April, 1920.

+

Industrial Physicians Extend Their Organization.—Following the meeting of the American Association of Industrial Physicians and Surgeons at New Orleans which was held in connection with the American Medical Association, a campaign is announced to extend membership. The Association at last reports had 600 active members in what is now its fifth year. The membership has been a little larger but decreased some during the war. President Geo. E. Vincent of the Rockefeller Foundation recently stated that there were some 1,500 corporations in the country employing industrial physicians and

surgeons, most of whom were full-time men. At the New Orleans meeting a program was set on foot to interest medical colleges and teaching institutions in extending their work to qualify their graduates for this important field. It is stated that the usual medical training does not fill the bill, and that about one more year of work of graduate character, devoted to such subjects as industrial psychology, statistics, sociology, public speaking, occupational therapy, functional re-education, industrial hygiene, occupational diseases, and the administration of industrial medical service is necessary. The officers elected for the present year are as follows: President, Dr. Otto P. Geier, Cincinnati, O.; First Vice President, Dr. Thomas R. Crowder, The Pullman Co., Chicago, Ill.; Second Vice-President, Dr. W. Irving Clark, The Norton Company, Worcester, Mass.; Secretary-Treasurer, Dr. Francis D. Patterson, Dept. of Labor and Industry, Harrisburg, Penn.; and Asst. Secretary-Treasurer, Miss M. S. Shane, P. O. Box 4055, West Philadelphia Station, Philadelphia, Pa. What is believed to be the first local chapter of the National Association is the Cincinnati Chapter, whose organization has been completed in the latter part of the early months of 1920 and which has adopted a constitution and by-laws. An innovation consists in making eligible to active membership only those who are full-time industrial physicians and surgeons and leaving to associate membership all others, among whom are included a number of specialists in medical practice. The Cincinnati Chapter has to date 58 members. At the meeting of the Ohio State Medical Association in Toledo during the first week in June, under the auspices of the firm of Heath, Selby and Hein, some 15 physicians of the state, prominent in this field, perfected a temporary organization for forming a state chapter. A committee was appointed to proceed with the organization and to adopt principles of organization. In this connection it is worth while to note that a similar organization of industrial engineers is prospective. Mr. Herbert N. Casson (*100% Magazine*, June, 1920) writes the following in answer to "Who Are Industrial Engineers?"—"(1) Industrial engineering is an art, a science, and a profession—all three. (2) Its scope is the whole field of industrial production—factories, mills,

mines, shipyards, etc. (3) It affects the other engineering professions favorably by offering them a new species of skilled service. (4) No man can qualify as an industrial engineer until he has spent at least five years successfully in the practice of his profession. (5) The position of the industrial engineer will be very similar to that of the architect." Some precepts from his statement might well serve as a guide for extension work in the National Association of Industrial Physicians and Surgeons.

4

Mine Rescue Work.—Two men were recently rescued from death in Indiana coal mines through the bravery of fellow-miners and a knowledge the latter had gained in mine rescue work from the United States Bureau of Mines which had just completed a course of training among these miners. It is declared by the rescuers themselves that the two men would have lost their lives if the old methods had been employed.

The two lives saved in the Clinton, Ind., field are but two of the latest instances that have come to the Bureau of Mines and generally the owners and superintendents of the mines are free to acknowledge that the rescues are the result of the efforts of the Bureau in training the miners. It quite frequently occurs that the miners in a certain part of the country succeed in their daily work in saving the life of some miner before they have finished their course with the bureau. Already more than 50,000 men have been trained, and it is estimated that men are daily being saved by these voluntary rescuers and many wounds and suffering lessened and workers are able to return earlier to their work by reason of the skill of the first-aid crews.

In order to further this movement that involves more than a million men in the United States, the Bureau of Mines holds each year a great contest in which miners' teams enter for the championship. The next contest of this character will be held at Denver, Colorado, September 9-11, and teams in the East and West are now in training to enter. This time the contests will include Canadian and Mexican teams, and promises to be a great international affair in which the workmen of three countries will participate.

A Drinking Fountain that is Always Safe

The nozzle from which the water issues cannot be touched by the lips. The column of water is directed at such an angle that in falling it cannot again touch the nozzle. It is also impossible for the fingers to touch the discharge pipe. This is what makes the

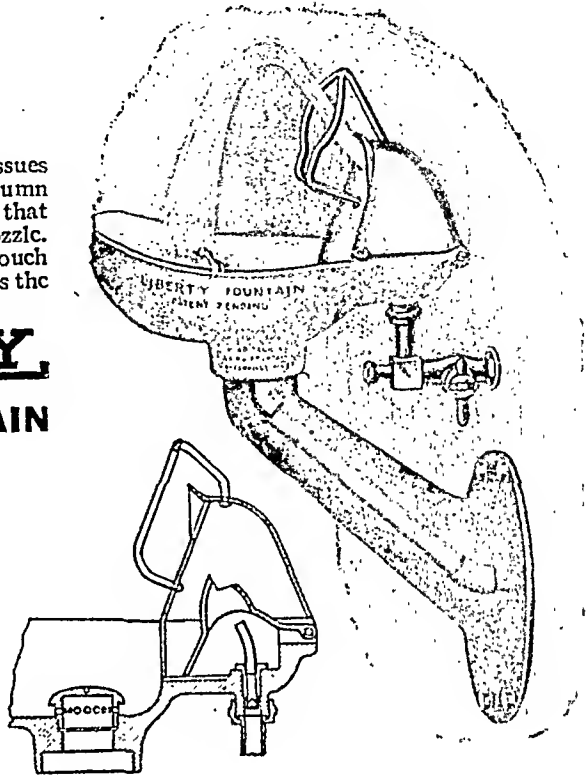
PURO LIBERTY DRINKING FOUNTAIN

100% SANITARY

Safeguard public health by equipping schoolhouses, playgrounds, parks and streets with *Puro Liberty Fountains*.

Our illustrated booklet will interest you.

PURO
SANITARY DRINKING FOUNTAIN CO.
HAYDENVILLE, MASS.



SAVE THE BABIES

Educate the mothers to the importance of maternal nursing in the welfare of the infant.

"THE LONG vs THE SHORT HAUL" A MOTION PICTURE

Showing the liability of contamination in every step of the city milk supply, and why mother's milk is best for baby.

A most convincing piece of health propaganda.

Every Health Board should use this film.

Send for Bulletin.

National Motion Pictures Company
Manufacturers and Distributors
Motion Picture Films, Slides and
Machines
Educational Films a Specialty
INDIANAPOLIS, INDIANA

Live Lantern Slides for Health Lectures

A picture tells more at a glance than a hundred words of narrative, and its message is remembered far longer.

EDEXCO LANTERN SLIDES

will add force and entertainment to your Health Talks.

Our new list comprises over a thousand slides on School, Child, Baby and Mouth Hygiene; Flies, Mosquitoes, Milk and Tuberculosis.

Send a Postal Today

for our new list of slides—it is **FREE** for the asking.

**EDUCATIONAL
EXHIBITION CO.**

331 Custom House St., Providence, R. I.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Francis H. Slack, M. D., and Mr. James M. Strang.

Complement Fixation Test for Tuberculosis.—The results of 6,128 complement fixation tests made on 1,207 sera from 1,000 patients point to the fact that this is not a 100 percent test for the detection of tuberculosis. A considerable percentage of sera from incipient and far-advanced cases apparently contains insufficient antibodies to fix complement no matter what system or what antigen is used for the test.

About 70 percent positive results appear to be the average findings with all types of unselected active tuberculosis cases for many thousands of complement fixation tests made by many serologists using tubercle bacillus suspensions or tuberculins as antigens. Normal, non-tuberculous patients gave almost no positive results on repeated tests. Moderately and far-advanced cases in good condition showing constitutional symptoms gave an average of 85.2 percent positive fixation in this series.

The author concludes that the complement fixation test will not be very valuable, as an aid in diagnosis, to the tuberculosis specialist except as a confirmatory test. However, a positive fixation reaction will be of very great value to the general practitioner, not only as a confirmatory test but also as an aid in diagnosis and prognosis.—von Wedel, *Jour. Immun.* March, 1920.

+

Biologic Studies of the Diphtheria Bacillus.—The morphologic characteristics of the diphtheria bacillus show a tendency to variations from time to time. The morphologic types are, therefore, apparently non-specific. The solid forms corresponding to types D₂ and E₂ are probably young forms of the more common granular types.

Solid-staining types of the diphtheria bacillus are sometimes virulent. They should not

be regarded as avirulent on the basis of morphology alone. Virulence tests should be made to determine the status of carriers. Positive cultures from carriers whether convalescents or those in contact with cases should be considered virulent, regardless of morphologic characteristics until proven otherwise.

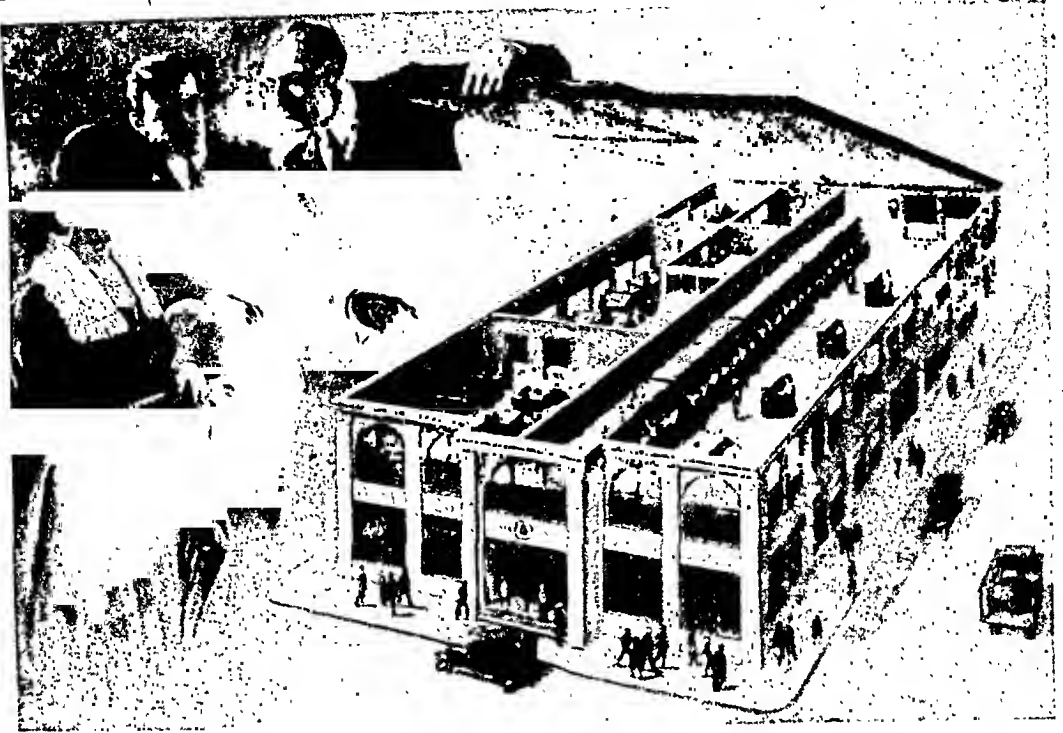
By use of the agglutination test two groups of the diphtheria bacillus have been determined. These groups are distinct, showing no evidence of cross-agglutination. The members of the two groups show no difference in morphology or in relative virulence. The antitoxins to these two groups are not so sharply differentiated as the agglutinins, as group antitoxins seem to exist in small amounts common to both groups, but the effectiveness of therapeutic diphtheric antitoxin would probably be enhanced by the inclusion in its production of a strain of the second or smaller group.—L. C. Havens, *Jour. Inf. Dis.*, May, 1920.

+

Sterilization of Milk by Electricity.—In the conclusions of a report "On the Destruction of Bacteria in Milk by Electricity" (Medical Research Committee, Special Report Series No. 49) the authors say that milk can be rendered free from *B. coli* and *B. tuberculosis* by the electrical method without raising the temperature higher than 63° or 64° C.; that this temperature effect is very short in duration, and in itself is not the principal factor in the destruction of the bacteria; that though the milk is not sterilized in the strict sense of the word, yet the percentage reduction of the bacteria taken over a period of a fortnight is 99.93; and that the taste of the milk is not altered, and, so far as careful chemical examination can determine, the properties of the milk are not in any way impaired.

The authors scarcely consider the definite bactericidal action of the electrical current. They say that it is not due to copper liberated from the electrodes, for they found no trace of copper in the treated milk.—*Medical Officer*, May 22, 1920, 200. (D. G.)

The Preliminary Programs have been published in the
August NEWS LETTER? Did you get your copy?



The Public Confidence

An important part of the management of the Bell System is to keep the public informed concerning all matters relating to the telephone.

We consider this an essential part of our stewardship in the operation of this public utility. It is due not only the 130,000 shareholders, but it is due the whole citizenship of the country.

We have told you of new inventions to improve service, of the growth of service, of problems involved in securing materials, employing and training workers, of financing new developments, and of rates necessary to maintain service.

You have been taken into our confidence as to what we are do-

ing, how we do it, why we do it. You have been told of our efforts to meet unusual conditions; of how we have bent every energy to provide service in the face of storms, floods, fires.

It is an enormous task today to provide adequate service in the face of shortage of workers, raw materials, manufacturing production and transportation.

Nevertheless the service of the Bell System has been improved and extended this year. Over 350,000 new stations have been put into operation. And the loyal workers of the Bell System are establishing new records for efficiency and will establish new records for service.



**AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES**

One Policy

One System

Universal Service



Good Ventilation is Essential to Public Health and Comfort

The question of Ventilating street cars is beginning to receive the attention which its importance to **PUBLIC HEALTH** and **COMFORT DEMANDS**. It is a recognized fact that practically all the "WINTER DISEASES" are merely the result of **BAD AIR** and that **ADEQUATE VENTILATION** is the only preventive remedy.

During the past six years **UTILITY HONEY-COMB VENTILATORS** have been installed on approximately 16,000 cars, and are being more universally used than all other ventilators, because they have proven far superior. In tests made in Chicago, New York City, Washington, D. C. and Cleveland, Ohio, in which were tried thirteen other car ventilators, the **UTILITY HONEYCOMB VENTILATOR** was found to possess the highest merit, and was given a 100% efficiency rating by the U. S. Railroad Administration, Committee on Standardization.

New Bulletin on Ventilation Mailed on Request.

Railway Utility Co., **Mfrs. of Ventilators and Thermostatic Heat** **151 W. 22nd St.**
 Regulators for Steam Railway and street cars **Chicago**

NUTROSE

We are now prepared to accept orders for small quantities of **NUTROSE** for immediate delivery. This material is satisfactory for the preparation of bacteriological culture media.

NUTROSE has been unobtainable for some time and as our production is still limited, future requirements should be estimated in advance.

This is a typical example of our ability to furnish materials that are difficult to secure.

WRITE US FOR OUR NEW 432-PAGE CATALOG

CHICAGO A. DAIGGER & CO. ILLINOIS

PUBLIC HEALTH CLIPPINGS

"The modern crusade against tuberculosis brings hope and bright prospects to recovery to hundreds and thousands of victims of the disease who under old teachings were abandoned to despair."—*Theodore Roosevelt*,

+

Heredity

"What is heredity?"

"Something a father believes in until his son begins acting like a darn fool."—*American Legion Weekly*.

+

"The secret of national health is to be found in the homes of the people."—*Florance Nightingale*.

+

Safety First

Lies slumbering here
One William Lake;
He heard the bell,
But had no brake.

—*Detroit News*.

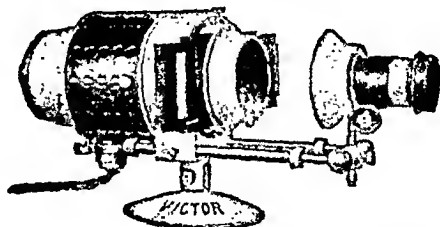
Teach the Necessary Laws of Health by the VISUAL METHOD

Progress will quickly be made toward the eradication of all diseases by visualizing the causes.
Proclaim warfare against the baffling germs of disease
and

VISUALIZE Health Lectures

by use of the

VICTOR Portable Stereopticon



and VICTOR Patented Featherweight Slides

Special slide lecture set on Tuberculosis.
Slides made from any copy.

Catalogs Mailed Upon Request

Victor Animatograph Company

(Incorporated)

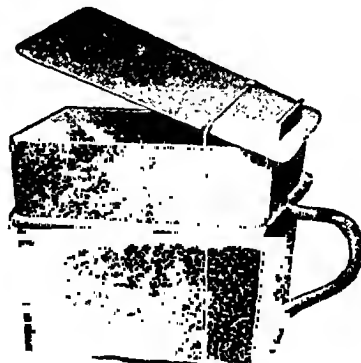
225 Victor Bldg.

Davenport, Iowa



"To Be Certain—

Burn-It-All



BURNITOL MFG. CO.
Boston Chicago San Francisco

No. 5 COVERED SPUTUM CUP.
An all paper "Burnitol" Cup.



REGULAR BOYS AND GIRLS, THAT'S ALL—LOOK AT THEM

There's nothing more important to a parent than to see his children healthy, happy and growing. But they cannot act for themselves. They must be protected and guided. They must be kept from the dangers of the street and the dangers of the city. They must be kept from the dangers of the city and the dangers of the street.

The first and the very best thing you can do for your own or your neighbor's children is to give them a clean town in which to live.

Pure water, adequate drainage, freedom from the filth and disease that bring cholera, typhoid and typhus—these are indispensable to health.

Has your town a decent sewer system? Does it reach all houses? The house of your neighbor—cook, grocer, butcher, milkman or grocer?

Does he live in a place where he can get clean, safe and pure water and sewerage? Does he have a bathroom and sewer in his house?

You yourself have seen the material that goes into the making of a Vitrified Clay Pipe.

Vitrified Clay Pipe is like the best of your best work. It is made of a special clay, it is fired in a special kiln, it is glazed with a special glaze.

A Vitrified Clay Pipe is made of a special clay, it is fired in a special kiln, it is glazed with a special glaze.

Enough to keep you from making any more. It is made of a special clay, it is fired in a special kiln, it is glazed with a special glaze.

CLAY PRODUCTS ASSOCIATION
CHICAGO

VITRIFIED CLAY

Sanitary Sewer Pipe



An appealing full page message aimed at the hearts of the millions who read Literary Digest and Collier's

ANOTHER ONSLAUGHT AT ILL HEALTH

Many times it is the physician who leads the agitation for community sanitation with its lower rates of sickness and death.

The medical profession will note, therefore, with interest that the national advertising of the Vitrified Clay Pipe manufacturers is being directed along similar lines.

The appeal is tellingly made on behalf of little children, and the object is *complete* sanitation—every house connected with a sewer system.

CLAY PRODUCTS ASSOCIATION
CHICAGO PITTSBURGH

VITRIFIED CLAY

Sanitary Sewer Pipe



PUBLIC HEALTH CLIPPINGS—Continued

Health Officer Responsibility

Health officers should be impressed with the conviction that the safety of the society of the future depends upon the work that is being done today, and that he labors, not for the present, but for all time.—*Michigan Public Health.*

✦

At fifty miles
Drove Ollie Pidd,
He thought he wouldn't
Skid, but did.
—*Rome (N. Y.) Sentinel.*

✦

Epidemics of disease are the normal aftermaths of war.

✦

From a Different Angle

"You can't get an intoxicating drink except with a doctor's prescription," remarked Mrs. Cornrossel.

"Yes," replied her husband. "I was jes' thinkin' of writin' to our boy, Josh, tellin' him to drop law an' study medicine."—*Washington Star.*

✦

Preparedness

Dr. Blank has been appointed head physician of the Charity Hospital. Orders have been issued by the authorities for the immediate extension of the Cemetery of Mount Parnasse.—*Daily Paper.*

✦

Non-Preventive

There was a man in our shop,
He was so wondrous wise;
He wouldn't wear his goggles,
Now he hasn't any eyes.

—*National Safety Council.*

✦

Health Is Priceless

Health is a priceless possession. Impaired health is a blow to all effective work. Don't wait until disease overtakes you to safeguard yours. Then it is often too late. Spend freely of time, effort and money, if need be, to keep yourself 100 percent fit. Nothing else pays as well.—*H. W. Wiley.*

✦

Concentration of health forces can win the war against disease, as concentration of military forces won the world war.



One-Cent Hearty Breakfasts

Quaker Oats costs one cent per large dish. It forms almost the ideal food in balance and completeness.

One chop would cost about 12 times as much. And each egg costs some 4 or 5 times a dish of Quaker Oats.

Quaker Oats, in calory value, is twice as rich as round steak. Yet it costs about one-tenth what meat and egg foods cost.

Folks should remember in these high-cost days that the greatest food that grows still costs but little.

At this writing, this is what some necessary foods cost on the calory basis.

Cost per 1,000 calories

Quaker Oats	5½c
Average Meats	45c
Hen's Eggs	60c
Chicken up to	\$1.66

Quaker Oats

Extra-flavory flakes without extra price. They are flaked from queen grains only—just the rich, plump, flavory oats. We get but ten pounds from a bushel.

The Quaker Oats Company

Chicago

"In the last analysis, the value of personnel service will be measured by the employer in terms of increased production, and by the employee by the opportunities which are accorded to him for personal development both financial and spiritual. Both groups will measure such service by the yardstick, 'Does it pay?'"

THE HUMAN FACTOR IN INDUSTRY

By

LEE K. FRANKEL, PH. D.

Third Vice-President, Metropolitan Life Insurance Co.

and

ALEXANDER FLEISHER, PH. D.

Assistant Secretary, Metropolitan Life Insurance Co.

The First in its Field

Here is a concrete analysis of every method of securing better co-operation between employer and employee, together with a clear-cut statement of its actual value as determined by its records when put into operation.

THE HUMAN FACTOR IN INDUSTRY summarizes the results of the various methods of labor administration to date, suggests lines of future development, and embodies comprehensive interpretation of the purposes and motives which have brought personnel and service work into being, with an authoritative reply to the question—Is it worth while to employer and employee?

This new work describes in detail the value of scientific management, devoting space to the results obtained from such methods as profit-sharing, bonus plans, night schools, medical care, group insurance, industrial housing, employment management, etc.

No one interested in these problems can afford to overlook this latest and most important contribution to the literature of the subject.

At your booksellers or direct, Price \$3.00

THE MACMILLAN COMPANY

Publishers

NEW YORK

MORE FACTS
AND
FALLACIES
OF
COMPULSORY HEALTH
INSURANCE

To Scientific
and
Medical Men
these addresses
will be
sent on request,
free of charge

By

FREDERICK L. HOFFMAN, LL.D.

Third Vice-President and Statistician
The Prudential Insurance Company of America

Send for this free literature on

HEALTH INSURANCE

- Facts and Fallacies of Compulsory Health Insurance (1917)
- Public Health Progress Under Social Insurance (1917)
- Autocracy and Paternalism versus Democracy and Liberty (1918)
- Failure of German Compulsory Health Insurance: A War Revelation (1918)
- Health Insurance and the Public (1919)
- More Facts and Fallacies of Compulsory Health Insurance (1919)
- National Health Insurance in Great Britain (1920)
- Poor Law Aspects of National Health Insurance (1920)



The PRUDENTIAL
INSURANCE COMPANY OF AMERICA

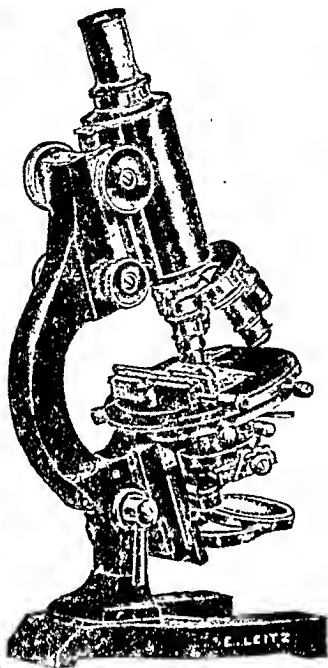
Incorporated under the laws of the State of New Jersey

FORREST F. DRYDEN, President

HOME OFFICE

NEWARK, NEW JERSEY

LEITZ MICROSCOPES ARE THE STANDARD OF THE WORLD



Leitz Research and Micro Photographic Microscope "AA," outfit 30, with complete sub-stage illuminating apparatus "a," and three-lens condenser N.A.1.40, triple nose-piece, apochromatic objectives 16mm, 4mm, oil immersion 2mm, N.A.1.32, compensating eye-pieces No. 6 and 12, in mahogany cabinet.

Microscope Stand "AA"

It is especially recommended for Research Investigations and Micro Photography.

For this purpose stand "AA" has been selected as standard by the leading laboratories of the U. S. Government, the Hospitals, Universities and Industrial Institutions throughout this and other countries.

The mechanical construction is of utmost rigidity and every part of its adjustment of thorough precision.

Leitz Apochromatic Objectives are individual in Quality and their Optical Efficiency embodies the very latest achievements in optical science, as developed by the Leitz Research Departments.

The Leitz Apochromats excel in:

Range of numerical aperture
Definition of image and resolving power
Flatness of field
Color correction

Catalog AA will be forwarded upon request.



School of Hygiene and Public Health of The Johns Hopkins University

The third session opens September 28, 1920. Opportunities for instruction offered in Public Health:

Hygiene, Chemistry as applied to hygiene, including the analysis of foods and the principles of nutrition, Social and Mental Hygiene, etc. The courses in these subjects are organized upon a trimestral basis, and students may enter the School as candidates for a degree, or as special students, at the beginning of any trimester. Men and women students are admitted on the same terms.

Courses are arranged leading to the degree of Doctor of Public Health, Doctor of Science in Hygiene and Bachelor of Science in Hygiene. The details in regard to the requirements for matriculation in these courses are described in the catalogue of the School, which will be forwarded upon application.

A Certificate in Public Health may be awarded to qualified persons after one year of resident study.

An intensive course, comprising conferences, demonstrations and laboratory work, and designed to meet the needs of Public Health Officers, will be given from November 1 to December 11, 1920. Fee \$50.00.

For further information address the

**DIRECTOR OF THE SCHOOL OF HYGIENE
AND PUBLIC HEALTH
JOHNS HOPKINS UNIVERSITY
310-312 West Monument Street
BALTIMORE, MARYLAND**

School of Public Hygiene of The University of Pennsylvania

Eleventh year begins September 24, 1920. Courses are given in preventive medicine and epidemiology; industrial, personal, camp, school, meat and milk hygiene; sanitary engineering, entomology, parasitology, bacteriology, immunology and serology, sanitary chemistry, vital statistics.

The first year of the course is devoted to intensive laboratory instruction with didactic teaching to amplify and coordinate the laboratory work. The second year of the course is devoted to field work in public health administration and in the management of special hospitals and public health laboratories.

The courses are arranged for students preparing for the Dr. P. H. degree, and for the Ph. D. degree in public hygiene.

For announcement and further information address the

**Director, School of Public Hygiene
University of Pennsylvania
Philadelphia, Pa.**

SCHOOL OF PUBLIC HEALTH OF Harvard University

AND THE

Massachusetts Institute of Technology

Eighth Year Begins September 27, 1920

Courses in preventive medicine, hygiene, sanitary engineering, laboratory procedures, public health practice and administration, vital statistics, etc., leading to a

**CERTIFICATE IN PUBLIC HEALTH
C. P. H.**

New courses in Industrial Hygiene in the Harvard Medical School are open to students in the School of Public Health.

For information and catalogues apply to

**DIRECTOR, SCHOOL OF PUBLIC HEALTH
Harvard Medical School
240 Longwood Avenue
BOSTON, MASS.**

The Graduate School of YALE UNIVERSITY
offers courses of study leading to the

**Certificate in Public Health
and the degrees of
Doctor of Public Health and
Doctor of Philosophy (in Public Health)**

¶ The course for the Certificate occupies one year and is open to men and women who have received a bachelor's degree or have completed at least the first two years in a medical school of high standing.

¶ The course for the Doctorate in Public Health is a two years course for medical graduates.

¶ The course for the Doctorate in Philosophy is the usual three years course for those who hold their bachelor's degree.

¶ Further information in regard to the scope of the courses and the specific requirements may be obtained by addressing the

**DEAN OF THE GRADUATE SCHOOL
Yale University
New Haven, Connecticut**

PIONEER MICROSCOPE MAKERS

FIRST TO SUPPLY AMERICAN MARKET WITH

OPTICAL GLASS

America before the war was dependent upon Europe for optical glass. Among others, we had long dreamed of its manufacture here. Importations shut off and staggering national needs for optical instruments for military and naval purposes, afforded the opportunity of making our dream a reality. Several years of research formed a nucleus which, with Government aid, blossomed into being at Hamburg, N. Y. (suburb of Buffalo), in what knowing ones have termed the most ideal optical glass factory in the world. This factory rendered a most important national service in time of imperative need.

Since the war further research has developed many additional types of glass of which there are no other American manufacturers. We now make 42 types. Every optical instrument and photographic lens factory in America (save one) is today using our optical glass. Our factory is the only available source of supply in America for nearly all of these types. In quality we have approached the European standard on many types and excelled on many others. This we feel is a great national triumph and gives us advantages in absolute control of the quality of our lenses.

SPENCER LENS COMPANY
BUFFALO, N. Y.



BORDEN'S MILK

is Safe

Thirty Inspectors and three veterinarians in the Borden Service live in the country where our milk is produced, and devote their entire time to guarding the Borden Supply at its source. These men make it their business to know that the milk that goes into a Borden bottle is

**Safe, Clean, Wholesome
and from Healthy Cows**

In addition, Borden's Milk is Pasteurized in accordance with the requirements of the Local Department of Health. You take no chances with Borden's Milk. It is safe when delivered to you.

BORDEN'S

Farm Products Company, Inc.

Phone, Franklin 3110 136 W. Lake Street

CHICAGO, ILLINOIS

BACTERIOLOGICAL STAINS

Dry Stains Chemicals
Staining Solutions
Culture Media Reagents
Embedding Material

For the purpose of diagnosing clinical cases where accuracy is of PARAMOUNT importance, laboratory technicians find our products indispensable on account of their UNIFORM QUALITY, SOLUBILITY, PURITY and SHARP STAINING EFFECTS.

Our complete price list will
be mailed free on request



Illinois Research Laboratories

now located in new quarters at

127 No. Dearborn Street, Chicago, Ill.

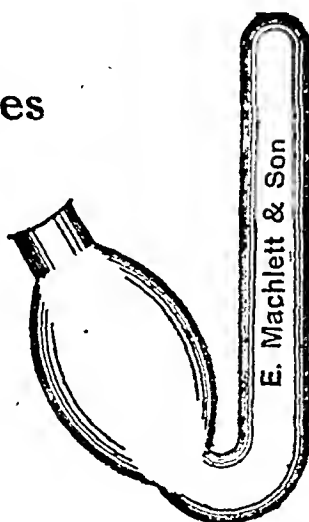
Fermentation Tubes

Improved Type

Straight Sided
Special Graduated

Pipettes

For Bacteriological
Milk Examinations



Chemical Apparatus

Special Apparatus

made from

Drawings

E. MACHLETT & SON

153 East 84th Street

NEW YORK CITY



Globe-Wernicke Sectional Bookcases

are designed for the Office as well as the Home. Made in sizes for technical and reference books and hold them ready for instant use

The Globe-Wernicke Co.

91-93 Federal Street, Boston

Desks

Wood and Steel Filing Cabinets

Chairs

PLASCO

Stains, Reagents and Culture Media



Manufactured and standardized in our laboratory under the personal supervision and direction of our Chemist and Bacteriologist.

MR. FRANK E. CHALLIS

We carry a complete line of Apparatus and Materials for the Pathological Laboratory and guarantee every item satisfactory.

Ask your dealer for PLASCO Products, or send for Price List.

Physicians Laboratory Supply Co.

121 North Wabash Avenue

CHICAGO, U. S. A.

Telephone, Randolph 1989

Pathological, Bacteriological, Chemical and Laboratory Apparatus

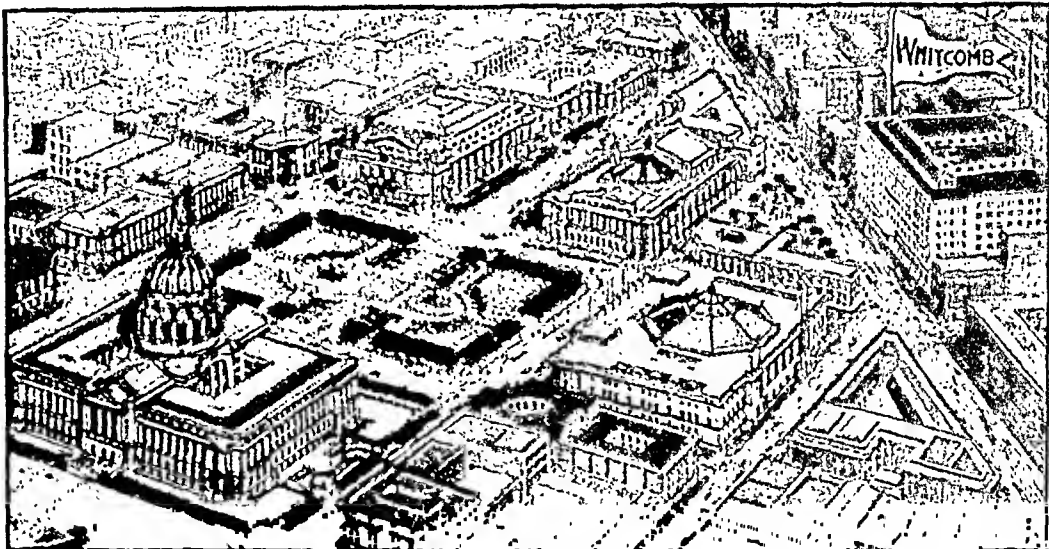
Burettes	Van Slyke CO.	Van Slyke Amino Nitrogen
Pipettes	Thermometers	Van Slyke Cullen Urea
Volumetric Flasks	Centrifuges	Drying Ovens
Cylinders	Centrifuge Tubes	Test Tubes
Filter Paper	Pipette Boxes	Porcelainware
Fermentation Tubes	Petri Dishes	Hydrometers
Filter Flasks	Erlenmeyer Flasks	Petri Dish Holders

The Emil Greiner Company

Established 1881

Incorporated 1905

Fulton and Cliff Streets, New York, N. Y.



HOTEL WHITCOMB SAN FRANCISCO

Conveniently located across the street from the
Convention Auditorium.

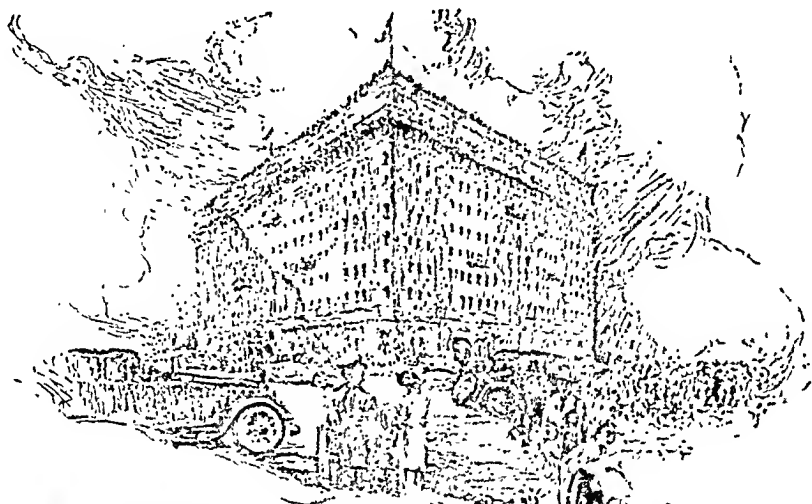
Delegates to the Convention of the American Public Health Association

Will find the homelike comfort and hospitality of the
Hotel Whitcomb one of the most enjoyable features
of their trip to the coast.

Of fire proof construction and thoroughly modern
in equipment the Hotel Whitcomb offers service to
please the most discriminating guest.

Rates from \$2.00 400 Rooms With Connecting Bath

J. H. VAN HORNE, Manager



The Palace Hotel

Management of Halsey E. Manwaring.

Extends
A Cordial Greeting
to the
Delegates and Visitors
to the
A. P. H. A. Convention
San Francisco
Sept. 13 to 17

Headquarters of the Association

PALACE HOTEL

Management of
Halsey E. Manwaring

Directory of Sanitary Engineers, Laboratories, Educational Courses and Health Service

METCALF & EDDY

Leonard Metcalf Harrison P. Eddy
Charles W. Sherman Frank A. Marston
Almon L. Fales
CONSULTING ENGINEERS
WATER SUPPLY and SEWERAGE
BOSTON, MASS. 14 Beacon Street

WESTON & SAMPSON

Robert Spurr Weston G. A. Sampson
Consulting Engineers for Water Supply, Water
Purification, Sewerage, Disposal of Sewage and
Municipal and Factory Wastes; Operation of
Purification Plants and Sanitary Analyses.
14 Beacon St., Boston, Mass.

ESTABLISHED 1848

BENDINER & SCHLESINGER

Analytical Laboratory
FOOD, MILK, WATER, CHEMICALS
Pathological and Bacteriological Work a Special Feature
Third Ave. and 10th St., New York City

NICHOLAS S. HILL, JR. S. F. FERGUSON HILL AND FERGUSON

Consulting Engineers
Water Supply Sewage Disposal Hydraulic Developments
Reports, Investigations, Valuations, Rates, De-
sign Construction, Operation, Management.
Chemical and Biological Laboratories.
112 East 19th Street New York City

William C. Hoad Arthur J. Decker W. R. Drury
HOAD AND DECKER
Consulting Civil, Hydraulic and Sanitary Engineers
Water Supply, Water Purification, Sewerage,
Drainage, Disposal of Sewage and Industrial
Wastes, Sanitary Analyses, Examinations, Ap-
praisals and Reports.
ANN ARBOR, MICHIGAN

FULLER & McCLINTOCK

George W. Fuller Jas. R. McClintock Jesse K. Glessey
Elmer G. Manahan Jas. C. Harding Wellington Donaldson
Myron E. Fuller Daniel C. Hayne Harry P. Jones
Consulting Hydraulic Engineers and Sanitary Experts
Water Supply, Sewerage, Refuse Disposal, Investigation
of Epidemics, Valuations, Supervision of Construction
and Operation.
170 Broadway, New York City
Valentine Bldg., Toledo, Ohio.
Produce Exchange Bldg., Kansas City, Mo.

KEERL & CONKLIN

Hydraulic and Sanitary Engineers
Water Supply and Purification, Flood Relief, Land and
Anopheles Drainage, Sewerage and Sewage Disposal,
Treatment of Industrial Wastes, Investigations of
Water Pollution, Sanitary Chemical Analyses.
625-27 M. B. A. Bldg., Mason City, Iowa

THE BOSTON BIO-CHEMICAL LABORATORY

SAMUEL C. PRESCOTT, Director
Consulting Experts, Bacteriological and Chemical
Analyses; Water, Sewage, Milk Supply and
Dairy Inspection. Food Manufacture and Pres-
ervation. Disinfectants. Fermentation. Special
Investigations.
585 Boylston Street, Boston

PEASE LABORATORIES, Inc.

Successors to
LEDERLE LABORATORIES
39 West 38th Street, New York City
HERBERT D. PEASE, M. D., Director
JOHN H. WRIGHT, M. S. PAUL POETSCHKE, B. C.
Sanitary, Bacteriological and Chemical Investigations



Public Health Accounting

The Loose Leaf Typewriter Book-
keeping System is the only one
adaptable for use where type-
written records are desired at
low cost.
"The Modern Method," \$30.00
608 Renshaw Bldg., Pittsburgh, Pa.

BUBONIC PLAGUE IS CARRIED BY RATS



Kill the Rats To-Day

By Using the Guaranteed Exterminator

Stearns' Electric Paste

Ready for Use.

Better Than Traps.

"Money Back if it Fails."

2 oz. box, 35c

15 oz. box, \$1.50

Directions in 15 languages in each box

U. S. Gov't authorities have used the goods successfully.

Order from any wholesale or retail druggist.

Hay Fever Prophylaxis

The uniform stability and antigenic activity of the product employed is of utmost importance

Pollen Antigen

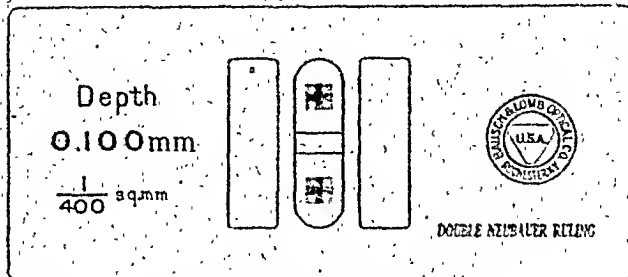
Lederle

is so prepared that its antigenic activity is accurately determined and so preserved that its stability is assured

Complete Data Upon Request

Lederle Antitoxin Laboratories
511 Fifth Avenue, New York.

Bausch & Lomb Haemacytometers



No. 3518 Double Neubauer Ruling

Haemacytometer, complete in case, consisting of:

Counting Chamber (Buerker type) with Double Neubauer ruling of precise accuracy and plain lines.

Mixing Pipette, 1:100 for red corpuscles.

Mixing Pipette, 1:10 for white corpuscles.

Cover Glasses, plane, polished, 20x26 mm; one each 0.4 mm and 0.6 mm.

Price, \$17.50

Every part of this Haemacytometer is subjected to exacting tests before leaving the factory, and is covered by our full guarantee as to accuracy, workmanship and material.

Bausch & Lomb Optical Co.

419 S. Paul St., Rochester, N. Y.

New York

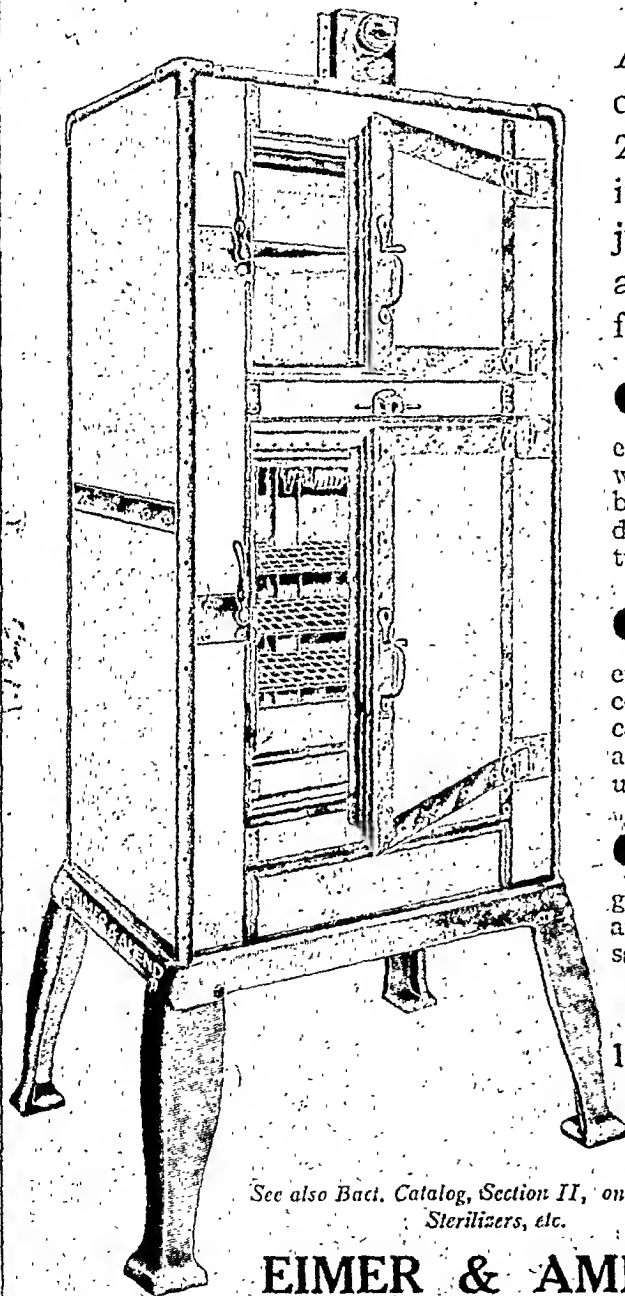
Washington

Chicago

San Francisco

Leading American Makers of Microscopes, Photographic Lenses, Projection Apparatus (Balopticons), Ophthalmic Lenses and Instruments, Photomicrographic Apparatus, Range Finders and Gun Sights for Army and Navy, Searchlight Reflectors, Stereo-Prism Binoculars, Magnifiers and Other High Grade Optical Products.

Thelco "LOWTEMP" Electric Incubator



Although primarily designed for use at 20°C. the "LOWTEMP" incubator can be used just as satisfactorily at any temperature from about 8° to 45° C.

¶ The Thelco "all metal" thermostat is quickly and easily set for any temperature within the range of the incubator and will maintain indefinitely constant temperature to one degree Centigrade.

¶ Adjustable cold air circulation around the inside jacket of incubator and splendid construction reduces the ice consumption to a minimum and secures highest possible uniformity.

¶ Exterior of incubator and the working chamber are of glazed porcelain fused on steel at 2000° F. The most perfect sanitary construction.

Dimensions of Working Chamber
18 by 15 by 12 inches, \$395.00

Descriptive pamphlet on request

*See also Bact. Catalog, Section II, on Incubators,
Sterilizers, etc.*

EIMER & AMEND

18th to 19th St.
NEW YORK CITY

Founded 1851
Headquarters for Laboratory Supplies

Pittsburgh Office
2011 Jenkins Arcade

Vol. X.

OCTOBER, 1920

Dr. McCoy

No. 10

LIBRARY
BIOLOGICAL LABORATORY
WASHINGTON

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN
PUBLIC HEALTH ASSOCIATION

IN THIS ISSUE

IMPORTANT PAPERS FROM
SAN FRANCISCO MEETING

BY

Rude, Ravenel, Schevitz, Cramp and Crum

Published monthly on the 20th by the American Public
Health Association at

124 W. Polk Street, Chicago, Ill.

ADDRESS EDITORIAL MATTER TO

169 MASSACHUSETTS AVE.
BOSTON, MASS.

Subscription Price, \$4.00 per Year. Single Copies, 50 cents.
A. P. H. A. Membership, Including Subscription, \$5.00 per year.

Entered as second class matter January 20, 1920, at the postoffice at Chicago, Illinois, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized February 28, 1920.

Laboratory Apparatus and Supplies

COMPLETE EQUIPMENT FOR BACTERIOLOGICAL AND PATHOLOGICAL LABORATORIES

Microscopes	Centrifuges (2-tube, 4-tube and 8-tube combination heads.)	Petri Dishes
Microscope Lamps		Culture Tubes
Mechanical Stages		Chemical Tubes
Dark Field Illuminators	Centrifuge Tubes	Flasks (Culture, filter, Erlen- meyer, boiling, volu- metric.)
Haemocytometers	Babcock Bottles	Cylinders
Stage Micrometers	Babcock Centrifuges	Graduates
Eye Piece Micrometers	Sputum Shakers	Pipettes (Plain and graduated)
Micro Slides	Pipette Boxes	Porcelain Ware
Micro Cover Glasses	Petri Dish Boxes	Burettes
Hang Drop Slides	Wassermann Racks	Burette Stands, Clamps, etc.
Microscopical Stains (Dry and solution)	Water Baths	Filter Paper
Lens Paper	Autoclaves	Bacto Culture Media
Cedar Oil	Incubators	
Xylol	Hot Air Sterilizers	
Nichrome and Platinum Loops	Drying Ovens	
	Test Tube Baskets	
	Test Tube Racks	

Chemicals and Reagents

The above is a list of some of the articles which we carry in stock ready for immediate shipment.

ITEMIZED QUOTATIONS GLADLY RENDERED UPON
REQUEST

We specialize in equipment for Board of Health Laboratories and solicit your request for information along these lines.

E. F. MAHADY COMPANY
671 Boylston Street BOSTON, MASS.

AMERICAN PUBLIC HEALTH ASSOCIATION

BOARD OF DIRECTORS, 1919-1920

OFFICERS

President, W. S. Rankin, M. D., Raleigh, N. C.
 Vice-Presidents, A. J. Douglas, M. D., Winnipeg, Man.
 S. L. Jepson, M. D., Charleston, W. Va.
 W. H. Robin, M. D., New Orleans, La.
 Treasurer, Roger I. Lee, M. D., Cambridge, Mass.
 Secretary, A. W. Hedrich, C. P. H., Boston, Mass.

EXECUTIVE COMMITTEE

W. S. Rankin, M. D., Raleigh, N. C. (1920)
 Roger I. Lee, M. D., Cambridge, Mass. (1920)
 A. W. Hedrich, C. P. H., Boston, Mass. (1920)
 C. J. Hastings, M. D., Toronto, Ont. (1920)
 Peter H. Bryce, M. D., Ottawa, Ont. (1920)
 W. A. Evans, M. D., Chicago, Ill. (1921)
 A. J. McLaughlin, M. D., Washington, D.C. (1921)
 M. P. Ravenel, M. D., Columbia, Mo. (1922)
 Lee K. Frankel, Ph. D., New York City (1922)

DIRECTORS ELECTED BY THE ASSOCIATION

Directors whose terms expire in 1920

John B. Anderson, M. D., Seattle, Wash.	L. A. Galaretta, M. D., Havana, Cuba	P. M. Hall, M. D., Minneapolis, Minn.
M. S. Fraser, M. D., Winnipeg, Man.	C. J. McGurran, M. D., Devils Lake, N. D.	W. H. Kellogg, M. D., San Francisco, Cal.
E. R. Kelley, M. D., Boston, Mass.	S. J. Crumbine, M. D., Topeka, Kan.	B. L. Arms, M. D., Jacksonville, Fla.
	M. M. Seymour, M. D., Regina, Sask.	

Directors whose terms expire in 1921

F. L. Hoffman, LL. D., Newark, N. J.	J. T. Black, M. D., New London, Conn.	A. J. McLaughlin, M. D., Washington, D. C.
Oscar Dowling, M. D., New Orleans, La.		G. H. Sumner, M. D., Des Moines, Iowa

Directors whose terms expire in 1922

M. P. Ravenel, M. D., Columbia, Mo.	John A. Kappelman, M. D., Canton, Ohio	Haven Emerson, M. D., New York City
Henry F. Vaughan, D. P. H., Detroit, Mich.		J. D. Robertson, M. D., Chicago, Ill.

PAST PRESIDENTS (Directors Ex-Officio)

Stephen Smith, M. D., New York City	John N. Hurty, M. D., Indianapolis, Ind.
Frederick Montizambert, M. D., Ottawa, Ont.	Rudolph Hering, Sc. D., New York City.
S. H. Durgin, M. D., Millbrook, Mass.	William C. Woodward, M. D., Boston, Mass.
Peter H. Bryce, M. D., Ottawa, Ont.	Wm. T. Sedgwick, Sc. D., Cambridge, Mass.
Richard H. Lewis, M. D., Raleigh, N. C.	John F. Anderson, M. D., New Brunswick, N. J.
Gardner T. Swarts, M. D., Providence, R. I.	W. A. Evans, M. D., Chicago, Ill.
Charles O. Probst, M. D., Columbus, Ohio	Chas. J. Hastings, M. D., Toronto, Ont.
Robert M. Simpson, M. D., Winnipeg, Man.	Lee K. Frankel, Ph. D., New York City

~~REPRESENTATIVES~~

REPRESENTATIVES OF SECTIONS TO BOARD OF DIRECTORS

Laboratory, G. W. McCoy, M. D., Washington, D. C.	Sociological, Louis I. Harris, M. D., New York City
Vital Statistics, Louis I. Dublin, Ph. D., New York City	Sanitary Engineering, E. D. Rich, Lansing, Mich.
Public Health Administration, T. D. Tuttle, M. D., Topeka, Kan.	Industrial Hygiene, J. W. Schereschewsky, M. D., Washington, D. C.
	Food and Drugs, Prof. James O. Jordan, Boston, Mass.

The Board of Directors also includes representatives from affiliated state health organizations.

SECTION OFFICERS

Laboratory Section (Organized 1905)

Chairman, A. B. Wadsworth, M. D., Albany, N. Y.	V. Chairman, Roger G. Perkins, M.D.,* Cleveland, O.	Secretary, B. L. Arms, M. D., Jacksonville, Fla.
--	--	---

Vital Statistics Section (Organized 1908)

Chairman, W. H. Davis, M. D.,* Washington, D. C.	V. Chairman, W. A. Flecker, M. D., Richmond, Va.	Secretary, W. F. Petrie, Lansing, Mich.
---	---	--

Public Health Administration Section (Organized 1908)

Chairman, A. T. McCormack, M.D.,* Louisville, Ky.	V. Chairman, John A. Vogelson, Philadelphia, Pa.	Secretary, J. M. Fürstman, M. D., Bloomington, Ill.
--	---	--

Sociological Section (Organized 1911)

Chairman, Ira S. Wile, M. D., New York City	V. Chairman, W. H. Brown, M. D., Bridgeport, Conn.	Secretary, Phillip S. Platt,* New Haven, Conn.
--	---	---

Sanitary Engineering Section (Organized 1911)

Chairman, Paul Hansen Springfield, Ill.	V. Chairman, Samuel A. Greeley,* Chicago, Ill.	Secretary, E. D. Rich, Lansing, Mich.
--	---	--

Industrial Hygiene Section (Organized 1914)

Chairman, F. D. Patterson, M. D., Harrisburg, Pa.	V. Chairman, A. J. Lanza, M. D., Washington, D. C.	Secretary, Prof. C.-E. A. Winslow,* New Haven, Conn.
--	---	---

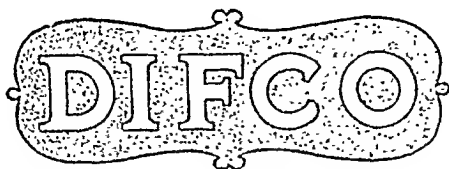
Food and Drugs Section (Organized 1917)

Chairman, Fred C. Blanck, Ph. D., Baltimore, Md.	V. Chairman, John P. Street,* Indianapolis, Ind.	Cor. Sec'y, H. W. Rodfield, Ph. D., New York City
---	---	--

Secretary, Prof. James O. Jordan, Boston, Mass.

*Chairmen of Program Committees are indicated with asterisks.

TURN FORWARD TO PAGE VI FOR OTHER DIFCO PRODUCTS



BACTO-PEPTONE

DIFCO STANDARDIZED

**The Original Standardized Peptone
for Bacteriology**

Bacto-Peptone is the original peptone designed to meet particularly the nutritional requirements of bacteria in culture.

It is the first peptone designed to meet the requirement of uniformity in its chemical and biological properties.

It is made in large quantities by expert workmen under rigid scientific check and control. Raw materials are approved only after assay.

Accurate records of each lot are kept throughout the manufacturing process, and only those lots which pass definite chemical and bacteriological tests are allowed to go into stock for distribution.

A definite requirement as to the H-ion concentration in solution was applied first to Bacto-Peptone.

It is standardized as to its Tryptophane content and supports vigorous Indol production within 24 hours after inoculation.

Bacto-Peptone has passed the experimental stage and has proved its absolute dependability for all nutritional requirements of Bacteriology.

Bacto-Peptone stands on its own merits and completely substantiates all claims made for it.

The additional equipment which we were forced to install in order to furnish the unprecedented quantities of Bacto-Peptone requisitioned for the U. S. and allied military establishments enables us to take care of all orders, irrespective of size, promptly and uniformly.

For more complete description send for Bulletin 20.

Carried in stock by the principal dealers in Scientific Supplies

DIGESTIVE FERMENTS COMPANY

DETROIT, MICHIGAN, U. S. A.

TURN FORWARD TO PAGE VI FOR OTHER DIFCO PRODUCTS

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 West Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Avenue, Boston, Mass.

Subscription price, \$4 per year. American Public Health Association membership, including subscription, \$5 per year.

OCTOBER, 1920

CONTENTS

Vol. X, No. 10

	Page
Endemic Diseases vs. Acute Epidemics.....	761
By Mazÿck P. Ravenel, M. D.	
What Can a Community Afford to Pay to Rid Itself of Malaria?.....	768
By L. M. Fisher.	
Status of State Bureaus of Child Hygiene.....	772
By Anna E. Rude, M. D.	
Industrial Health Education—A Means and an End.....	780
By Jules Schevitz.	

Continued on Page VII

Excellent *Building* Food For Growing Children

(and for all ages)



The Original and Genuine

Horlick's Malted Milk fortifies active, growing young minds and bodies with highly efficient and inviting nourishment—properly balanced for building bone and flesh.

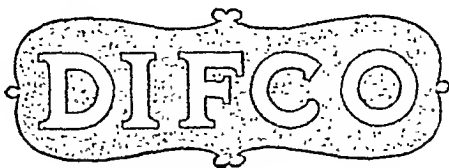
Its strengthening effect is of utmost benefit now during the strenuous school season.

Serve it to your children in place of tea or coffee. It aids digestion and adds zest to every meal. Provide it for their school luncheons and in the afternoon when tired from play

**"HORLICK'S" IS AS GOOD FOR "GROWN-UPS"
AS FOR THE YOUNG—KEEP A JAR AT HOME**

Avoid Imitations

TURN BACK TO PAGE IV FOR OTHER DIFCO PRODUCTS



ACCURACY is the goal of all work in bacteriology, as well as in chemistry. It is better served when all bacteriologists work with uniform culture media, standardized to a high degree of uniformity, as in the use of "Difco" Culture Media, Dehydrated. Uniformity of cultural factors is assured, either for the same worker at different times, or for different workers at the same time.

SPEED is greatly desired in bacteriological procedure and no advance in this respect has been made for many years that compares with the use of "Difco" Culture Media, Dehydrated. The saving in time, as contrasted with the old methods, is easily demonstrated, and the difference is incredible.

CONVENIENCE becomes a prime consideration when accuracy and speed are at stake. The convenience of "Difco" Culture Media, Dehydrated, can be appreciated only by actual trial. Think of having a dozen different formulas in convenient packages on your shelves, needing only one weighing and the addition of water to obtain a medium ready to sterilize.

ECONOMY is a consideration when quality has been satisfied. The use of "Difco" Culture Media, Dehydrated, assures economy, not only thru the factors of Accuracy, Speed, and Convenience, but by actual comparison of costs, based on materials, labor, and time.

More than a dozen standard formulae, all carried in stock by the principal dealers in scientific supplies. Descriptive bulletins upon request.

Your inquiries are solicited

Digestive Ferments Company

DETROIT, MICHIGAN, U. S. A.

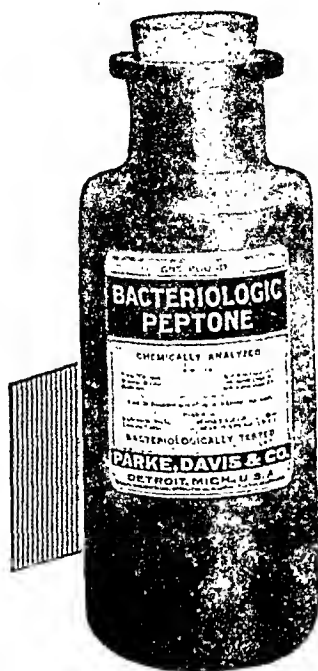
TURN BACK TO PAGE IV FOR OTHER DIFCO PRODUCTS

Continued from Page V

	Page
Truth in Advertising Drug Products	783
By Arthur J. Cramp, M. D.	
Geographical and Seasonal Variations in Infant Mortality in the United States, 1917-1920	790
By Frederick S. Crum, Ph. D.	
Editorials:	
Heels and Toes	800
Quarantine of the Cretic	802
Books and Reports Reviewed	803
Association News:	
Health Employment Bureau	806
List of New Members	806
Conventions, Conferences and Meetings	808
Public Health Notes	809
State Health Notes	812
Public Health Laboratory Notes	822
Industrial Hygiene and Occupational Disease	823

INDEX TO ADVERTISERS

BIOLOGICAL PRODUCTS		Page
Bethlehem Laboratories	IX	Spencer Lens Company..... XXIV
Harmer Laboratories	XII	Thomas Company, Arthur H..... XXI
Illinois Research Laboratories..... XXVIII		Thomas Company, F. H..... XXIII
Lederlo Antitoxin Laboratories..... XXXIV		Will Corporation
Mulford Co., H. K..... XIII		XVI
Squibb & Sons, E. R..... XV		LIQUID CHLORINE AND APPARATUS
FOOD PRODUCTS		Wallace & Tiernan Co., Inc..... X
Borden's Farm Products Company. Inc.	XXVIII	POSITION WANTED
Horlick's Malted Milk Co..... V		806
Mellin's Food Company..... XXXII		PUBLIC HEALTH COURSES
Quaker Oats Company..... XXV		Harvard Medical School..... XXIX
HELP WANTED	806	Ohio State University..... XXIX
INSURANCE CO. SERVICE		University of Pennsylvania..... XXIX
TO HEALTH OFFICERS		SANITARY ENGINEERS
Metropolitan Life Insurance Co.... XXVII		Fuller & McClintock..... XXXIII
Prudential Insurance Company of America	XXVI	Hill and Ferguson..... XXXIII
LABORATORIES		Hond & Decker..... XXXIII
Abbott Laboratories	XI	Keerl & Conklin..... XXXIII
Bendiner & Schlesinger..... XXXIII		Metcalf & Eddy..... XXXIII
Boston Bio-chemical Laboratory... XXXIII		Weston & Sampson..... XXXIII
Pease Laboratories, Inc..... XXXIII		STANDARD HEALTH LITERATURE
LABORATORY APPARATUS AND SUPPLIES		Standard Methods of Water An- alyses
Bausch & Lomb Optical Co..... XXXV		XXIX, XXXI
Central Scientific Co..... XVIII		STEREOPTICONS AND MOTION PICTURES
Daigger & Co., A..... XXII		Educational Exhibition Co..... XXX
Digestive Ferments Company..... IV, VI		National Motion Pictures Co..... XXX
Elmer & Amend..... Back Cover		Victor Animatograph Co..... XXX
Greiner Company, Emil..... XIV		DON'T OVERLOOK THESE
International Equipment Company E. Leltz Inc.....	XVI	Associated Service Bureau
Machlett & Son, E..... XXXII		Boston Drinking Cup Company..
Mahady Company, E. F..... II		Burnitol Manufacturing Co..... XXIV
Parke, Davis & Co..... VIII		Euro Sanitary Drinking Fountain Company
Sargent & Co., E. H..... XVII		XXVII
		Railway Utility Company
		XXII
		Stearns' Electric Paste
		XX



Bacteriologic Peptone

Meets every
need for
a standard
peptone

BACTERIOLOGIC PEPTONE, P. D. & CO., is an American-made product that is proving its excellence in all requirements of the biological and bacteriological laboratory. Its use in the production of diphtheria and tetanus toxins, vaccines, sera, etc., is commended by the highest authorities.

BACTERIOLOGIC PEPTONE, P. D. & CO., has demonstrated its efficiency in the cultivation of organisms and in the various formulae in which a standard peptone is necessary. It is used in the biologic analysis of milk, water, foods and soil, in public-health work, and in standardization of disinfectants.

BACTERIOLOGIC PEPTONE, P. D. & CO., is *uniform in composition, readily and completely soluble, correct in chemical structure.*

Literature and quotations will be promptly supplied on request.

DETROIT, MICHIGAN,
U. S. A.

Parke, Davis & Co.

HYCLORITE

Solvent with High Germicidal Action

ALTHOUGH Hyclorite (undiluted) has 7 to 8 times the hypochlorite strength of the ordinary Dakin's solution, clinical tests show that Hyclorite diluted to make a Dakin's solution is less irritating than the Dakin's solution commonly prepared from other agents, since its alkalinity is lower and of less irritating character.

Hyclorite is a solvent of necrosed tissue.

It is always ready. Just add water. No testing needed. Prepared always to a definite hypochlorite strength (Na OCl 4.05%) and exceedingly low alkalinity.

Possesses remarkable stability and thus may be kept without loss of germicidal activity for long periods.

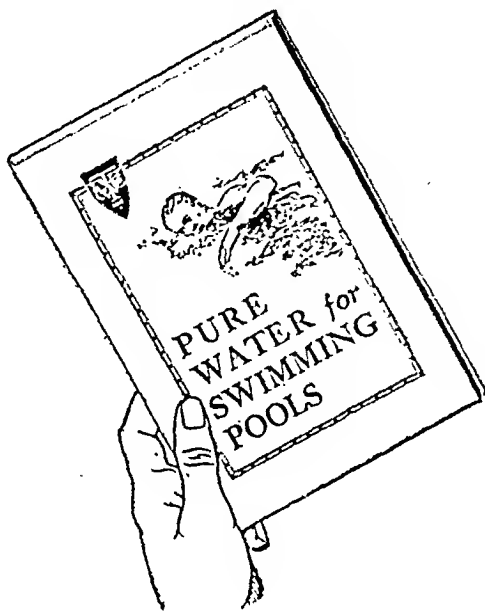
(Accepted by A. M. A. Council of Pharmacy and Chemistry for N. N. R.)

Write for samples and literature to

BETHLEHEM LABORATORIES, Inc.
BETHLEHEM, PA.

Manufactured by
General Laboratories
Madison, Wis.

For
Bethlehem Laboratories, Inc.
Bethlehem, Pa.



JUST OUT!

the latest W & T Technical Publication.

A complete and up-to-date treatise on Swimming Pool Sanitation.

Every bather pollutes a Swimming Pool—this pollution cannot be stopped but the danger can be overcome by disinfection with

LIQUID CHLORINE
applied by

'W & T' APPARATUS

Liquid Chlorine affords the cheapest and most efficient means of *Swimming Pool Disinfection*—just as it does for drinking water.

Cost—about *six cents* daily for a 50,000 gallon pool.

Wallace & Tiernan Co., Inc.

349 Broadway, New York

Philadelphia Chicago San Francisco Pittsburgh
Dallas Kansas City Atlanta



USE COUPON TO SECURE COPY

WALLACE & TIERNAN CO., Inc.

349 Broadway, New York City

Please send a free copy of your new thirty-two page publication
"Pure Water for Swimming Pools."

Name.....

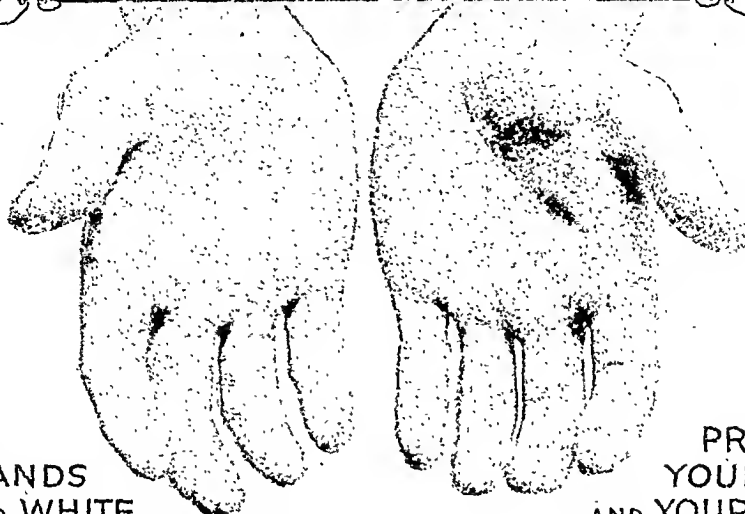
Street Number.....City and State.....

Official Position.....with.....

A. J. R. H.

AT LAST = A REAL

GERMICIDAL SOAP



KEEPS
THE HANDS
SOFT AND WHITE

PROTECTS
YOUR HANDS
AND YOUR PATIENTS

CHLORAZENE SOAP POWDER

THIS soap contains no caustic alkalies, and hence does not irritate the skin nor injure fabrics nor rubber. It is neutral, and therefore non-irritating. It is thoroughly cleansing and sterilizes at the same time.

The germicidal agent carried in this soap, is many times more powerful than phenol or bichloride.

Chlorazene Soap Powder is best for cleansing the hands and site of operation, against the transmission of infection. Makes an excellent antiseptic wash and douche.

Small instruments and utensils may be disinfected with it. Excellent also for enemas, shampooing, shaving, for the relief of chafing surfaces, itching, irritated skin eruptions, and as a deodorant from perspiration.

Chlorazene Soap Powder should be used wherever there is suspected infection, by physicians, surgeons, nurses, dentists, and in the sick-room. It should be in every doctor's office and hospital.

Price per can, with sifter top, 60 cents net.

*If your druggist cannot supply you send your order
direct to our home office or convenient branch points.*

THE ABBOTT LABORATORIES

Home Offices and Laboratories - - - Dept. 3, Chicago, Ill.
NEW YORK SAN FRANCISCO SEATTLE LOS ANGELES TORONTO BOMBAY



Standardized and Tested Bacteriological Dyestuffs

EVERY bacteriological dye or stain released by the Harmer Laboratories Co. has been carefully standardized and rigidly tested to meet the requirements of the best recognized technique.

For this reason your results with Harmer Dyestuffs are invariably uniform and reliable, for we fully realize the importance of results that often depend on the purity and trustworthiness of bacteriological dyes.

This rigid testing, which further safeguards our care in production, has resulted in a wide-spread confidence in Harmer Dyestuffs and their use in the most exacting laboratories and hospitals.

Harmer Bacteriological Dyestuffs are stocked by leading dealers or may be obtained direct from us. Specify them for dependable results.

Do you have our booklet, "Biological Dyestuffs & Rare Organic Chemicals"? A post card brings it without obligation.

***The* HARMER**
LABORATORIES
PHILADELPHIA

Diphtheria Antitoxin Then *and* Now

When the **Mulford Laboratories** made the first antitoxin that was produced commercially in this country, in 1894, the doses were necessarily very large and bulky, and one ounce glass stoppered vials were used as containers.



Early form of
Antitoxin
Container

NOW, as a result of research and long experience, we are able to produce refined and concentrated antitoxin, testing as high as 3000 units and more per Cc. Furthermore, rigid check tests for potency and sterility guarantee the strength and purity of the product.

The **Mulford Laboratories** were the first to introduce a piston syringe container for antitoxin, and the present perfected syringe gives you a most convenient sterile container, ready for immediate use.

Mulford Diphtheria Antitoxin

Purified and concentrated
High potency
Low total solids
Same density as the blood
Dosage and sterility
guaranteed

The Mulford label is your guarantee of absolute reliability on Diphtheria Antitoxin and all other Biological Products.



Mulford Perfected Antitoxin Syringe

Ask for new booklet on Diphtheria.



H. K. MULFORD CO., Philadelphia, U. S. A.

REMOVAL NOTICE.—The executive, general and sales offices are now located in the Mulford Building, 640 North Broad Street.

48330M

Mulford

THE PIONEER BIOLOGICAL LABORATORIES

Pathological, Bacteriological, Chemical and Laboratory Apparatus

Burettes

Pipettes

Volumetric Flasks

Cylinders

Filter Paper

Fermentation Tubes

Filter Flasks

Van Slyke CO,

Thermometers

Centrifuges

Centrifuge Tubes

Pipette Boxes

Petri Dishes

Erlenmeyer Flasks

Van Slyke Amino Nitrogen

Van Slyke Cullen Urea

Drying Ovens

Test Tubes

Porcelainware

Hydrometers

Petri Dish Holders

The Emil Greiner Company

Established 1881

Incorporated 1905

Fulton and Cliff Streets, New York, N. Y.

BOARD OF HEALTH LABORATORY—Milk Testing

Electric Babcock

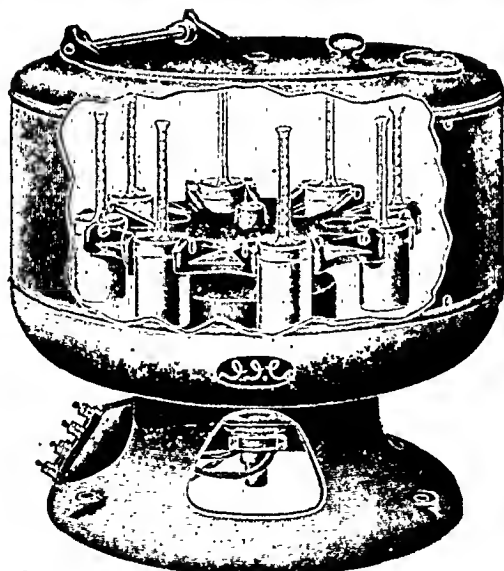
Testers

8-bottle

16-bottle

24-bottle

sizes



Babcock Test

Glassware

Massachusetts

Tested

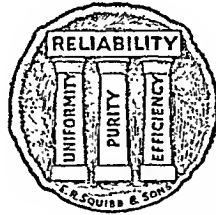
INTERNATIONAL EQUIPMENT COMPANY

Send for Catalog Cp.

352 Western Avenue, Brighton, BOSTON, MASS.

When writing to Advertisers, say you saw it in the JOURNAL

PURITY



POTENCY

The Seal of Trustworthiness

SQUIBB

Antitoxins
Serums
Vaccines
Chemicals

Seasonable Biologics:-

TYPHOID VACCINE

(Plain or Combined)

PASTEUR ANTI-RABIC VACCINE

(21 Treatments Complete)

TETANUS ANTITOXIN

(Immunizing or Curative)

THROMBOPLASTIN

(Local or Hypodermic)

For The Venereal Campaign:-

SOLARGENTUM

(20% pure silver in colloidal form)

PROTARGENTUM

(8% pure silver in organic combination)

PROPHYLACTIC OINTMENT

(30% Calomel)

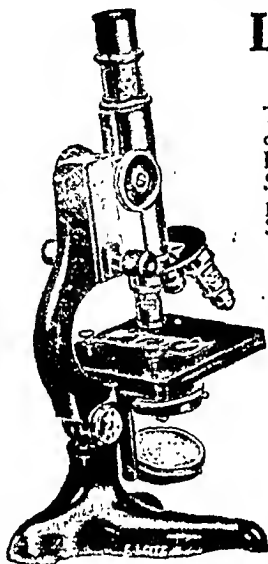
E. R. SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.
80 Beekman St., New York - New Brunswick, N. J.

Leitz Microscopes are the Standard of the World

The manufacture of Leitz Microscopes reaches back to 1840, the time when the Leitz Works were established

Leitz Laboratory Microscope "L-10"



This instrument is endowed with the same high "Leitz-Standard" of optical and mechanical workmanship as is recognized with Leitz Research Equipment.

Such a statement, the facts of which are substantiated daily, should prove convincing of the quality obtained with the purchase of Stand "L."

A Microscope of proper workmanship, under ordinary conditions of use, should fully last a lifetime. The Leitz Microscopes are offered with full guarantee to meet these requirements.

A Leitz Microscope is slightly higher in price than others; but it is the most economical one in the end.

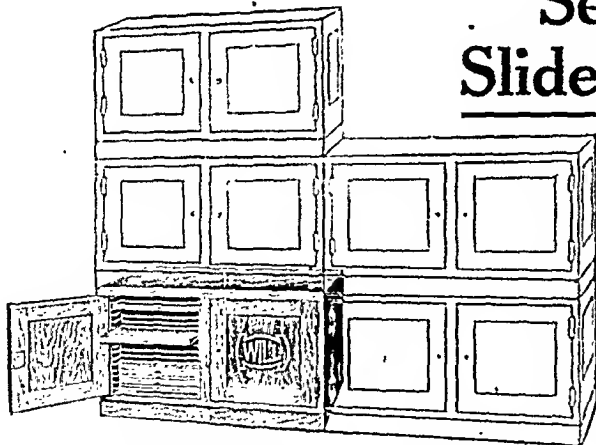
Leitz Concentric Darkfield Condensers are the standard in leading laboratories of the world.

Microscope "L-10," fully equipped for laboratory work, with quick-acting screw substage, Abbe condenser and iris-diaphragm, triple nose piece, Objectives 16mm., 4mm., Oil Immersion 1.8mm., Eye Pieces 6 and 10X, in cabinet \$145.00
Mechanical Stage for same " " " 33.50
Concentric Darkfield Condenser " " " 24.75

Write for Pamphlet No. B-1002

E. LEITZ, Inc., NEW YORK CITY

Sectional Slide Cabinets



Exactly Suited to the
Needs of

Hospitals

and

Pathological

Laboratories

Each Unit Is Com-
plete and Accommo-
dates 1500 Slides.

Can be Built Up Like a Book Case



The Will Corporation

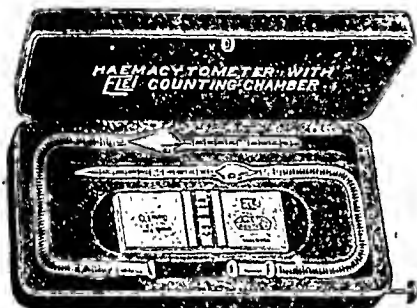
GLASSWARE - CHEMICALS - LABORATORY APPARATUS

ROCHESTER, N. Y.

ELEI

Blood Counting Apparatus

U. S. Patent No. 1,313,962



Each Blood Count Apparatus conforms with the specifications of the U. S. Bureau of Standards.

The Counting Chamber combines slides and supporting surfaces for the cover glass into one, eliminating the danger of loosening.

The Counting Chamber is unique in design and characteristic of the following features:

1. The construction entirely eliminates the cemented supporting surfaces for the cover glass.
2. The ruling produces increased visibility when in contact with solution.
3. The spacings of the ruling and the depth of the cell are guaranteed to be within the tolerance established by the U. S. Bureau of Standards, May 1, 1917.
4. The Blood Pipettes are the most accurate offered of either domestic or foreign make.

The Counting Chamber is furnished with the following rulings: Thoma, Tuerk, Zappert-Ewing, Neubauer and Fuchs-Rosenthal.

Carried in stock by

E. H. Sargent & Company

Importers, Makers and Dealers in Chemicals
and Chemical Apparatus of High Grade only.

155-165 E. Superior St.

Chicago, Illinois

See our exhibit at the Sixth National Exposition of Chemical Industries,
Grand Central Palace, New York, week of Sept. 20th.

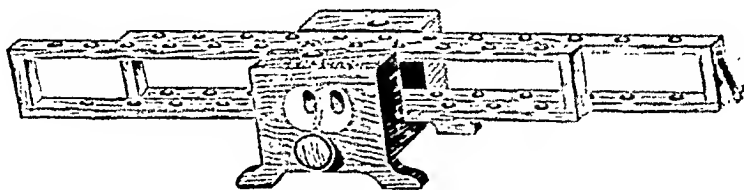
ANNOUNCING

THE COOLEIDGE COMPARATOR

FOR USE IN

THE DETERMINATION OF HYDROGEN ION
BY COLORIMETRIC METHODS

A SIMPLE, ECONOMICAL AND CONVENIENT DEVICE



No. 3036

FOR

Facilitating the Handling of Color Tubes

AND

The Comparison of a Series of Unknowns with a Graduated Series of Standard Tubes

The device shown above was designed by Professor L. H. Cooleidge, of the Department of Bacteriology and Hygiene of the Michigan State Agricultural College, to facilitate the rapid handling of color tubes in the determination of Hydrogen Ion Concentration (P_H) by Colorimetric Methods. It is a simple device, made of hard wood and provided with a convenient means of rapidly moving the rack containing the graduated series of standard tubes so that each tube can be quickly brought beside the unknown and the colors compared. When the color is matched, the rack containing the unknowns can be moved along one place by means of the knob shown in the illustration, and a new unknown is ready for examination.

While this instrument was originally devised for use in Hydrogen Ion Measurements, yet it is equally well adapted to any other determinations by colorimetric methods.

For complete description and price, send for Bulletin 90G

CENTRAL SCIENTIFIC COMPANY

LABORATORY

APPARATUS

SUPPLIES

Chemicals

Chicago, Ill.

460 E. Ohio St.,

U.S.A.

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 W. Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Ave., Boston, Mass.

Subscription price \$4 per year. American Public Health Association membership, including subscription, \$5 per year.
Subscriptions and memberships may be sent to the A. P. H. A., 169 Massachusetts Ave., Boston, Mass.

Vol. X

OCTOBER, 1920

No. 10

ENDEMIC DISEASES VS. ACUTE EPIDEMICS

MAZYCK P. RAVENEL, M.D.

*Professor Preventive Medicine, University of Missouri
Columbia, Mo.*

Read before Public Health Administration Section, American Public Health Association, at San Francisco, Cal., September 15, 1920.

Epidemics are cared for through the incident terror of the people, and there is always money to fight them and investigate, but the far more important insidious endemics attract little interest or popular support. Attention to reduction in morbidity, rather than mortality, rates is the "stitch in time" plea of Dr. Ravenel.

EPIDEMIC diseases break upon a community often with little warning, strike terror into the community, demoralize business, reap their harvest of victims and pass on, leaving physicians, nurses and the general public exhausted as well as somewhat dumbfounded by what has happened. Perhaps a few chronic cases may be left behind, some other diseases may be aggravated, and some may carry their scars for years or even for life, but all of these are greatly in the minority. The vast majority of those stricken recover promptly and in a few weeks or months, at most, have returned fully to accustomed health and vigor. This was the history of the worst and most extensive epidemic that has ever visited this country, and one of the worst recorded in history for the whole world—the epidemic of influenza

in 1918-1919. We have scarcely yet recovered our equilibrium and scientifically are still staggering under the impact of the blow, yet it must be admitted that in epidemic form the disease has accomplished its mission and has gone, leaving little behind physically except the graves of its victims to remind us of its visit. In spite of its appalling death-rate business was only temporarily disturbed, and those who survived speedily regained their normal health and strength. The scars left on the nation are the graves of the young who might otherwise have lived to a useful citizenship. The nation lost totally a deplorably large number of its citizens, but the loss ceased with the epidemic, and there are no maimed and wounded to be cared for, no burden to be carried for years to come.

Such is the history of epidemics generally—they come, rage and go on their way, leaving us little the worse except for the loss of life.

Entirely different is the picture presented by endemic diseases—a low death-rate as a rule, but a high sick-rate, a large proportion of the community more or less incapacitated for mental or physical work day after day, week after week, month after month and year after year, business and production slowed, vigor and manhood sapped, character and courage lost, progress stopped, districts depopulated, and as history shows, perhaps an entire people may fall before more vigorous enemies and disappear.

Two great civilizations of the past, both of which left treasures of literature, poetry and art, which have never been surpassed and seldom equalled, have disappeared. One had its home in Greece, the other in Italy. It seems fairly certain that endemic disease, especially malaria, played a large part in the decline and fall of these ancient peoples, sapping their vitality, destroying their health and changing their character. A study of the facts we have been able to collect teaches an interesting and useful lesson.

Greece. Prior to B. C. 500, only two references to malaria—both of which are doubtful—are known in Greek literature. The writings of Hippocrates, as well as those of lay authors, prove that in 400 B. C. malaria was endemic in many parts of the Greek world, the types are clearly described, and the effects on the people noted. Malarial cachexia is well described—its victims are said to have large spleens but thin faces and shoulders; fatal dropsies are common; the birth-rate is injuriously affected by the physical condition of the women; aging is premature and the span of life is short. The inhabitants of malarial districts are described as being short, stout, dark-haired, dark-colored and bilious, lacking in courage as well as endurance. The statement that people in

malarial districts were dark-haired may indicate that the fair northern element to which the Greeks seem to have owed their best qualities had disappeared or was disappearing. It seems probable that malaria was known in the medical schools even before Hippocrates, but this does not imply that it was prevalent in Greece itself, since it may have been observed in Asia Minor. Passages in Herodotus indicate that the Ionian Greeks had become infected by the latter half of the sixth century B. C. We are told that Dionysius attempted to train the crews of the fleet collected to resist the Persians. For a short time they persisted in the drills but soon became exhausted by the unusual exertion and heat, and refused to continue. Many became ill and many more were expecting to fall ill. While there is no certain evidence that malaria was the illness brought on by exhaustion and heat in this case, the story accords with what might have been expected among malarial carriers—the attack would be precipitated.

From both lay and medical writers we have abundant evidence that malaria was widespread in Greece from 400 B. C. and that its effects were pernicious. There is no positive evidence to prove that it did not exist before, or that it was introduced about this time. What evidence there is on these points is negative. That it became markedly more prevalent about this time seems fairly clear. A statue of "Health-Athena" was erected in the Acropolis at Athens between 429 and 400 B. C. The worship of the health goddess is usually referred to as connected with plague, but there is as good reason to believe that it was prompted by malaria. The worship of Æsculapius, the god of healing, was introduced into Athens from Epidaurus about the close of the fifth century. His festivals were in March and September, respectively, the beginning of the malarial season in Greece and its height. All evidence points to the increase of ill

health during this period. Medical history shows a steady decline from the rational methods of treatment introduced by Hippocrates and an increasing belief in dream-oracles, charms and other superstitions, a mixture of religion, magic and empiricism.

Perhaps no other disease would tend to foster such practices as much as malaria. Quinine was not known, and no specific cure of the disease was possible. Spontaneous cure is known to occur in all types of malaria except the pernicious, and the chief factors in such cures are diet, rest and change. It is then easy to understand how such cures were attributed to supernatural agencies, with the consequent increase of faith in such procedures, just as at the present day we see the origin and growth of medical cults and practices founded on the fallacy "*post hoc ergo propter hoc*," and the adoption of these cults by otherwise intelligent persons.

The blighting effects of malaria on energy and character were recognized by the early Greeks. The word *melancholy*, meaning black bile, occurs soon after the Greek words for malarial fever became common. *Melancholia* was the disease caused by black bile, to which quartan fevers were attributed by many Greek physicians, and Galen stated that large spleens were due to an excess of the "*melancholy humor*." Certainly all *melancholia* was not malarial in origin, but there can be little question that malaria was the chief cause of the condition.

There is no doubt that contemporaneously with the increase in malaria, as shown in both medical and lay writings, Greek character began to change for the worse—decay set in. Their brilliancy left them, initiative was lost, vacillation and indecision, weakness, cowardly depression and cruelty marked their conduct. The philosophy of even their best writers became pessimistic, and their former lofty patriotism was lost.

It would be extreme to attribute to

the spread of malaria alone the loss of physical excellence, mental and moral strength, and the many other fine characteristics of the ancient Greeks, yet it is possible that malaria might have been the fundamental cause. Other factors were certainly operative—chiefly prolonged and disastrous wars, perhaps made unsuccessful by the changes in Greek character. It is true that the most prolonged of these wars were civil, but the bad effects certainly extended beyond the states engaged. The flower of the young manhood was withdrawn from productive pursuits and many fell in battle. Agriculture must have come almost to a standstill, and with it drainage of the fields, which would become swampy and fertile breeding places for mosquitoes.

There is strong evidence that malaria occurred in epidemics and became endemic, though other epidemics are recorded, notably the "*plague*," which smote Athens after the Peloponnesian war.

With the decline of agriculture and increase in malaria there doubtless came the emigration of the more intelligent and energetic seeking healthier homes, and the degradation of those remaining, an effect of malaria recorded by Hippocrates. It is impossible to differentiate cause from effect with accuracy. A vicious circle was no doubt formed. In Greece as in Italy malaria increased as prosperity declined and prosperity declined as malaria increased. Pausanias, A. D. 180, states that the weakness of the Greeks in the third century B. C. was due to disease, and attributes the power of the Achæan League partly to the relative freedom from disease of its members. Plutarch says that the Greeks of his day were obliged to avoid fatigue lest an attack of fever should be brought on. "That malaria precipitated the decline can hardly be doubted; that it was the determining factor in most cases is scarcely less certain."

There is some authority as well as

good reason to believe that malaria played a part in the downfall of Sybaris, one of the most wealthy cities of ancient times and so populous that we are told they put an army of 300,000 men in the field. Their name has come down to us a synonym for love of ease and pleasure, yet the great wealth and influence of these people prove that they had energy and determination at one time. Their reputation for love of ease and effeminacy may have come from the precautions necessary to preserve health. The city was located in a hollow at the junction of the Crathis and Sybaris rivers, where it was hot at midday and cold at morning and evening. From this probably arose the saying that he who did not wish to die young must avoid seeing the sun when it rose or when it set—advice which might well be given in a malarial district. Probably here as elsewhere, malaria was only one of several factors in the decay of the people. The city was finally conquered by the inhabitants of Croton, who though vastly inferior in numbers to the Sybarites, turned the course of the Crathis to inundate the city, the ancient site of which is now a malarious swamp. It is of interest to note that ancient writers speak of Croton as being proverbial for its healthfulness, and this probably accounted in part at least, for their conquest over superior numbers.

Italy. The history of Italy is not so conclusive, though we have many remarkable facts which have not yet been explained in any way, and are satisfactorily accounted for by the increasing prevalence of an endemic disease weakening the people physically and morally. Without entering into controversial points as to the origin and identity of the Etruscans, it may be stated with certainty that they came from abroad ages before Rome was founded, and through superior skill and energy subdued the various people inhabiting the land, possessed themselves of the larger part of the Italian peninsula, remained domi-

nant for many centuries, built populous cities fortified by mighty walls, attained a high degree of civilization, second only to that of the Greeks, developed navigation and commerce to an extent that made them for centuries "lords of the sea," became eminent in military tactics, agriculture, medicine, arts and other sciences, especially astronomy.

"Etruria was of old densely populated, not only in those parts which are still inhabited, but also, as is proved by remains of cities and cemeteries, in tracts now desolated by malaria and relapsed into the desert; and what is now the fen or the jungle, the haunt of the wild-boar, the buffalo, the fox, and the noxious reptile, where man often dreads to stay his steps, and hurries away as from a plague stricken land * * * of old yielded rich harvests of corn, wine and oil, and contained numerous cities mighty and opulent, into whose laps poured the treasures of the East, and the more precious produce of Hellenic genius."

This wonderful people disappeared leaving no history of itself. Of the internal life and customs of the nation we have learned only recently through exploration and excavation. Their great reverence for the dead and firm belief in a future life led them to store in their tombs treasures of art, articles of personal adornment, vases, urns, mirrors, et cetera, which have revealed much of their life to us.

"In five centuries the Pontine district was converted from a fertile land, so thickly populated with a warlike people as to excite the wonder of the historian, into a dreary marsh with few inhabitants and more or less unhealthy."

Without question more than one cause must have been operative in bringing about the downfall and disappearance of such a powerful and cultured people involving the destruction of beautiful cities, one of which, Veii, equalled in size Athens or Rome, and which for the magnificence of its buildings was so pre-

ferred by the Romans to the Eternal City itself, that only the eloquence of one man prevented its becoming Roma Nova, and mistress of the world.

In attributing to malaria the primary or even an important role in the production of this desolation, we at once meet with the difficulty, as in the case of Greece, of showing that malaria did not exist, or was not prevalent, among these people during the period of their rise and greatness, and that it later became prevalent. This can be done only by inference. It is not conceivable that the Etruscans should have established themselves, built great fortified cities, and reached such heights of prosperity and civilization, in a country so fever stricken as this territory has been for centuries past. Even with our present knowledge malaria is perhaps the greatest obstacle to colonization and acclimation of European races in the tropical climates.

If malaria had been common, some reference to it would surely be found in the literature of the period, yet the first mention of it we find in Plautus, who died B. C. 184. Cato the Censor, B. C. 232-148, gives advice as to the location of a country house, and speaks of the unhealthfulness of marshy places. Since Cato wrote on many medical subjects, it seems that malaria would have been mentioned had it been known. It appears, therefore, that it must have been absent or so slight as to have escaped attention in his day.

Varro, B. C. 118-29, evidently knew malaria and suggested the etiology, which is perhaps the earliest statement concerning the relation of micro-organisms and disease. He says: "It is also to be noticed, if there be marshy places, that certain minute animals breed which are invisible to the eye, and yet, getting into the system through the mouth and nostrils, cause serious disorders."

Cicero, B. C. 106-43, mentions the tertian and quartan types of malaria, and Livy, B. C. 59-A. D. 17, gives evidence of having known the disease.

Suetonius tells us that Caesar, B. C. 100-44 when fleeing from Sulla, had frequently to change his hiding place "although aggravating his quartan fever."

Pliny, the Elder, A. D. 23-79, frequently mentions tertian and quartan agues, describes the symptoms and gives remedies. Evidently malaria had become widespread in his day.

Though references to intermittent fevers by the classical writers are frequent and definite and show a familiarity with all forms of malaria, there is no mention of particular localities in which infection might occur, though Strabo, B. C. 63-A. D. 23, wrote "All Latium is fertile—except those places which are marshy and productive of disease."

No argument is needed to show the extent of malaria in Italy for several centuries past, nor the blasting effect it has had on the prosperity of that nation. Its effect on the character of the inhabitants has been equally as marked as in Greece. The more enterprising are apt to seek more healthy homes, leaving the poorer and less enterprising, who gradually sink lower and lower. North says of the people of the Roman Campagna, "The moral sense of the natives of these towns is so degraded that the death of a horse or a mule is said to be a matter of far greater concern to them than that of a child or relative."

Are we justified in holding that malaria was responsible for the disappearance of peoples, changes in the aspect of the country and in the types of the inhabitants of these districts? In all cases in which definite history has been obtained, some political cause can also be found which may account for the changes to a greater or lesser extent, such as insecurity of life and property, war and disease and famine following war, with destruction of the works of civilization. Fertile areas when abandoned soon become overgrown, drainage ceases, small water courses become clogged with the production of swamps and marshes where luxuriant fields once

stood. We know that the Campagna was once in a high state of cultivation, studded with towns, and contained many luxurious villas, yet for centuries it has been a desolate waste, notorious for malaria. Sybaris, famous for its wealth and the luxuriousness of its inhabitants, has disappeared, and on its site a pestilential marsh, noted for malaria, now stands.

Doubtless wars, with their attendant miseries, played a large part in the disastrous history of ancient Italy, but it cannot be doubted that malaria made good use of the situation and has ever since held the subjugated districts. "The inhabitants reduced to the utmost state of destitution and misery, the soil untilled, the woods destroyed, the water courses neglected, nature uncontrolled has had her way for centuries with the result that a land which was the home of the greatest empire that the world has ever seen, occupied by a people who excelled in learning and the arts, as in luxury and vice, became a squalid pestilential desert, whose reclamation and restoration to anything approaching its former state will sorely tax the energies and finances of their successors."

Admitting freely that there are gaps in our information, and other causes undoubtedly played an important part, it seems certain that malaria was a prime factor in the decay and downfall of the two great peoples of ancient times, and that the histories of Greece and Italy have been profoundly modified by the implantation and spread of this disease in these countries.

Even the introduction of quinine and the discoveries of Laveran and Ross have not eliminated malaria as an important economic factor in these, as it is today in our own and other countries.

Hookworm. Since Ashford in 1899 demonstrated that the anemia of Porto Rico, which had been recognized as a scourge in that island for more than 100 years, and Stiles in 1902 showed that endemic uncinariasis existed in the

United States, many researches have been made and articles written on the extent and effects of hookworm. It produces profound anemia, retarded mental and physical development, permanent reduction in height and weight, muscular weakness with aversion to exertion, miscarriage and still-birth, and a high percentage of impotence in the male and sterility in the female. Its effects on the moral character are no less marked, causing disobedience, cunning, lying, stealing, forgery and sexual perversions, while psychic retardation, irritability, depression and blunting of the higher sensibilities are believed by some to be results.

Infection is widespread in our Southern States, in which 35 per cent of those examined have been found to harbor the parasite. The young are particularly affected, 58.5 per cent being children under 16 in this country. The disease is of long duration, while the parasite may live 12 to 15 years.

The cost to the South in economic waste is estimated at between \$250,000,000 and \$500,000,000 yearly. This gives an index of the large number of persons infected as well as the influence of the disease in lessening vigor and ability to carry on productive pursuits. Lack of physical development and physical disability lessen working capacity, while retardation of mental development with low vitality reduce capacity to learn—thereby fostering ignorance. Apathy and lack of ambition are typical of the infection, leading inevitably to shiftlessness, poverty and degradation. Geographically the infection is widespread throughout the tropical and subtropical countries. Endemic foci are often found in more northerly climates, especially in mines, workers in which have shown infection to the extent of 65 per cent.

The announcement of Stiles, followed by abundant proofs, excited much interest at the time, which was manifested by numerous discussions in the public press, and the humorists made much use of the

material. At present physicians and health officers remember the existence and bad effects of the disease, but the press has apparently forgotten it, the public has become used to it and interest has lagged. This is the usual story with endemic diseases.

I have selected these diseases to illustrate the baneful effects of endemic diseases on national life and vigor because of the disastrous influence they have had on the history of the world both in ancient as well as modern times, and are even now exercising in our hemisphere. Who can estimate the deterrent effect they have had on settlement and development of new country, and progress in already settled areas? Their heavy hand has also been felt in our economic and political life.

It is very hard to excite a community over malaria or hookworm. Even health officers accept reports of many cases of these diseases with much more complacency than they would a single case of small-pox, yet small-pox has not in the past sixty years done as much damage as malaria does each year. Our Public Health Service, as the result of careful surveys, estimates that between six and seven million persons suffer from malaria annually in the United States. In given communities 40 to 60, and sometimes 90, per cent of the population become infected. Large areas of fertile land remain uncultivated and uninhabited largely because of malaria. In districts where malaria prevails crops are shortened, prosperity and progress lag, while the energies and the ambitions of the inhabitants are sapped. It is this effect on character that gives to the anemia-producing diseases their chief importance and from this arises their baneful economic influence. No nation in the world has become or remained

great except through the virility of its people. Death, which is the great fear in acute epidemics, is a lesser evil to a nation than a slow, insidious, widespread disease, which spares life but destroys efficiency.

When an epidemic occurs, health officers are given, or can take, almost unlimited powers, and public sentiment backs them up even in extreme measures, while the public treasury is opened with a free hand. It is quite the contrary, as a rule, with endemic diseases—money to combat them is withheld, there is no excitement or even interest aroused, and public sentiment is not awakened.

One might instance in further elaboration of this theme the complacency with which the general public accepts the loss of 150,000 lives each year from tuberculosis with the economic loss entailed, and the unknown, but certainly enormous toll exacted by syphilis. Both of these diseases are destructive of energy, virility and life, but as with malaria and hookworm, they are, like the poor, always with us, and we have become accustomed to their presence.

I am well aware that whatever force there may be in the facts and arguments I have tried to present will apply with unequal weight to the various sections of our country, depending on the greater or less prevalence, or absence of these diseases. The principle involved is, however, the same for all. My plea is that we cultivate in ourselves and the public a wholesome fear of these infections with a correct appreciation of what they mean to the nation, that in our public health work we emphasize reduction in morbidity rather than mortality rates, and lay less stress on death, which must eventually come to everyone, and more stress on happiness and efficiency.

WHAT CAN A COMMUNITY AFFORD TO PAY TO RID ITSELF OF MALARIA?

L. M. FISHER,

*Associate Sanitary Engineer, United States Public Health Service,
Columbia, S. C.*

Anti-malarial measures, like any others, have a limit beyond which they may be deemed economically unprofitable. Here are given formulæ by which ratios may be figured of costs relative to benefits. For sentimental reasons, however, a community may be willing to pay somewhat more than it could afford as an investment.

UPON the intelligent understanding of this problem will largely depend the rate of progress with which the malarious sections of the country will be cleaned up. In places where health work has been backward the health authorities probably do not realize that the community will tax itself very heavily to assure itself of good health, provided it has confidence in the ability of the health authorities to do what they say is necessary to clean up the community. Good health is the greatest human asset. The extent to which this is appreciated by the average man is evidenced by the fact that advertising concerns find it profitable to make health the "appeal" in a large percentage of the advertising matter put out. Hugo Münsterberg, in his "Psychology of Business," says: "Psychological experiments in which advertisements with different feeling appeals were graded by twenty men and twenty women showed on an average that the idea of health appealed to the personality most strongly. Next comes cleanliness." . . . This is an indication of the extent to which health authorities can draw upon public support when confidence is established by results accomplished.

A man in a desperate situation will pay any sum to escape from it. The only requirement is that it must offer at least a faint chance of success. If his situa-

tion is less desperate he will weigh the money cost more in detail. It becomes then a question of relative values.

If a community has much malaria and possesses little money, it can afford to spend little on malaria, for other demands upon its funds cannot be ignored. It must provide for its means of livelihood first. It must finance agriculture, industry, commerce, transportation, and keep business as active as possible. The money a community spends on malaria control should be considered as an investment. *Whether it is a good or a bad investment depends upon the money returns realized just as in the case of any other investment.* The more intelligent and public-spirited a community is the quicker will it be to sense the value of a good investment in malaria control work.

The economic significance of malaria has probably not been fully realized by many people. The insidious losses do not attract marked attention since they are practically an everyday occurrence and few people, comparatively, die of malaria. The losses occur in little leaks. Personal efficiency is reduced. The business man is not fully alive to his opportunities. The laborer cannot render full value for his wages. His employer loses thereby and recoups his losses by reducing the pay for labor, thus the loss is passed on to the laboring man. The pro-

professional man suffers like the business man—from decreased personal efficiency. In addition both suffer from the smaller volume of business and from poorer collections because of the reduced prosperity of the community.

The manufacturer loses because of the lowered efficiency of the operative, and because of idle machines due to illness.

The railroads lose because the community does not produce the freight it would produce if every worker were fully efficient.

Time is the essence of the computation of the amount of this loss. If a cotton mill, for instance, produces 5,000 pounds less manufactured goods a day than it would produce if there were no malaria, it loses daily the profit it would make on manufacturing 5,000 pounds of goods. The laborers lose each day the compensation they would receive for manufacturing 5,000 pounds of finished product. The railroad loses the revenue it would earn each day by hauling 5,000 pounds of freight from the community. The merchants lose because there is less money to spend that day. The doctor loses because the wage earner must spend his money for the necessities of life, leaving little or nothing for family medical attention. The children, who are the first in the community to suffer, acquire a defective education because of lost days at school, and inefficient days. This handicap projected over a period of years in the lifetime of the individual may become very formidable in dollars and cents. It is not practicable to name a definite figure indicative of this loss. The community, however, realizes that it is a very real loss.

The farmer loses a portion of his crops because his labor is in bed or only partly efficient. Some of the family lose time nursing the sick; money is spent for quinine and other medicines, for screens, mosquito lotions, chill tonics and so forth.

The property owner loses because of

depreciated property values and low rents.

If all these losses are figured up for the year and capitalized, the result indicates from an economic and commercial view an amount for which the community would be justified in issuing bonds to effect permanent relief if a bond issue would have to be resorted to, or a cash expenditure, which would be justified if a bond issue would not have to be resorted to. From the result thus obtained, a sum must be deducted the interest on which would pay for the maintenance charges on the permanent work.

Thus if the losses above referred to should amount to, let us say \$8,000 a year, for the community, and figuring interest and sinking fund charges at 8%, the losses capitalized would amount to \$100,000. Now if maintenance of ditches, etc., would cost \$2,400 a year, this sum capitalized with interest at 6% would amount to \$40,000. The community would, therefore, be justified in bonding itself for \$60,000 or in raising and spending \$60,000 in cash. Whatever additional value the community would place upon the comforts of being free from mosquitoes, enjoying a good reputation as a healthful, energetic, enterprising town, could be added to the sum of \$60,000 above referred to.

The enormous drain malaria is upon the resources of a community tends to discourage those who must bear it, so that the enterprising ones will abandon the locality. What may be called a deterioration in the quality of the population is thus accentuated.

Carter observed that it is progressive, and commenting upon the above deterioration said in effect that in a country where malaria is prevalent the control of malaria is more important than the control of all other communicable diseases, including smallpox, cholera, bubonic plague, yellow fever, typhoid fever, dysentery, tuberculosis, etc.; that the population would move out of a malarious coun-

try and would not return,—they would return after the passing of a yellow fever epidemic or after cholera or after plague, but that malaria ruined a country economically.

Now, if in the above assumption the community contained a population of 3,000 the per capita first cost would amount to \$20, but if the results sought, namely, the elimination of malaria, were accomplished, the expenditure would undoubtedly be justified, although the per capita cost is high.

The first cost for malaria control work varies widely for different communities. In some localities it may amount possibly to some figure like \$1.50; in others it may amount to twenty times as much or even more. *It may even amount to a figure which would make it cheaper to abandon the property created by the community and let the people move away, rather than pay the cost of eliminating malaria.* In such a case decision must be made between continuous malarial infection or abandonment of the property which the industry of the community has created. It is thus caught on the two horns of the dilemma. Some communities were perhaps abandoned where control measures intelligently applied would have cost less than the value of the property abandoned, but were abandoned because knowledge of just what was necessary to be done did not exist.

The best course to pursue depends in such a case upon three factors: the annual community loss, the first cost of permanent work, and the cost of maintenance.

Let us assume that:

1. P equals the population in the community and

2. C the per capita first cost of malaria control work, then

3. PC is the total cost of the work. Now if

4. I is the interest and sinking fund charge in percent, then

5. PCI is the total annual interest and sinking fund charge in dollars. If

6. M is maintenance in percent of first cost, then

7. PCM is total annual maintenance charge, and

8. $PCI + PCM =$ Total annual cost, interest and maintenance. Let

9. $R =$ percent of population infected, then

10. $PR =$ number of infected persons in the community. Now if

11. $V =$ the annual loss in dollars per person infected, then

12. $PRV =$ total loss to community annually before control and equals average annual gain after complete control, and

13. $PRV - (PCI + PCM) =$ Total saving for community $= P(RV - C(I + M))$, and

14. $PRV - (PCI + PCM) =$ Net
 P

average annual gain per capita $= RV - C(I + M)$ and

15. $PRV - (PCI + PCM) =$
 P

$\frac{P}{C} =$ Annual dividend to
community on first
cost

$= RV - (I + M).$

C

Now if only partial control is effected and we let

16. F represent the percentage of control, such as 65%; 80%; 90%, etc., then equation 12 will become.

17. $PRVF =$ average annual gain under partial control: this factor F will appear in each of the remaining equations and equation 15 will take the form

18. $PRVF - (I + M) =$ Annual di-
 C

vidend to community on first cost.

From this equation it is evident that the dividend varies directly as the percentage of the population infected, directly as the loss per person infected, directly as the percentage of control and inversely as the per capita first cost, i. e., the greater the infection, the greater the

dividend; the greater the annual loss per person infected, the greater the dividend; the greater the percentage of control, the greater the dividend, and the less the first cost the greater the dividend. The percentage of infection alone does not determine the wisdom of undertaking the work nor does the per capita cost, but both must be considered together.

Now if we take two communities A and B, equal in population and assume interest charges the same in both places and annual maintenance a fixed percentage of the first cost in each place, the annual loss per person infected the same in each place and 100% reduction in each place, but with only 10% of the population infected in A and 85% in B and with a per capita cost of only \$1.50 in A whereas it is \$10.00 in B; then substituting these values in equation 18 we have for A, Dividend =

$$10 \times 5 - (8 + 7) = 18\%$$

1.50

and for B, Dividend =
 $85 \times 5 - (8 + 7) = 27\frac{1}{2}\%$

10

These results are only illustrative but indicate that the dividends on the first cost in the case of B are greater than they are for A although the per capita cost for A was very much less than for B.

Therefore, in order to arrive at an intelligent decision as to the profit of proposed malaria work in a community the first requirement is that a malaria census be taken to determine the approximate annual loss suffered because of malaria. The next step should be the preparation of an estimate of first cost and of maintenance annually. From formula 18 the annual average dividend could be approximated.

The sum that a community could afford to pay on the above assumptions may be very materially more than the sum it is willing to pay.



DETROIT SUMMER HEALTH CAMP

To help the most needy cases among children in getting back to normal, the Detroit Health Department opened in June, a camp on the site of the new Tuberculosis Sanatorium. This is an area of about a square mile in the country north of the city. The children are taken to the camp for a five-weeks' stay in relays of about 85, so that somewhere about 200 children who have been in the open-air schools during the past year are provided for. It is estimated, however, that open-air school space is needed for about 900 more.



The children at the camp are housed in army tents loaned by the Government, and spend the day in a regular order of sleeping, eating, swimming, games, and walking. A complete physical examination, including a culture from the throat, was made before the children were sent to the camp.

STATUS OF STATE BUREAUS OF CHILD HYGIENE

ANNA E. RUDE, M.D.

*Director, Division of Hygiene, U. S. Children's Bureau
Washington, D. C.*

Read at the Child Hygiene Session, American Public Health Association, at San Francisco, Cal.,
September 14, 1920

CHILD Hygiene is an essential part of any general program in public health and preventive medicine, and the prominence which this subject is assuming in this as well as other countries is indicative of its fundamental importance. No other phase of public health today compares in popularity with the child hygiene movement. Much confusion seems to have arisen in defining the terms "child hygiene" and "child welfare." Popular usage understands "child hygiene" to mean something less than health, while in the social service field the term "child welfare" has grown to have a meaning which applies only to selected groups of unfortunate children, such as the dependent, defective, delinquent, or neglected. This use of terms is probably the result of a lack of correlation of many individual activities dealing with special phases of welfare, but a changed attitude is imminent in that the tendency now is to see that the great mass of children bears a normal relation to society, and that health, education, recreation, and suitable employment are essentials in the normal life of all children. Literally understood, "child hygiene" is a more limited term than child welfare, which includes all conditions affecting the general well-being of the child. In the development of all comprehensive public health programs it is noteworthy that recognition is given more and more to the social and economic conditions as having a direct bearing upon all matters of hygiene; therefore, "child welfare" probably better defines the present day movements

towards safeguarding the health of the child than "child hygiene."

While the effects of war, through a reduced birth rate, and an increased sickness and death rate due to a scarcity and high cost of food and general hardship and privation which lower resistance to all forms of disease, have compelled other countries to realize the imperative need of the conservation of the life and health of the child, our more fortunate country is none the less alive to the importance of the problem.

In this country, as in foreign countries, a history of the child welfare movement shows that philanthropic and voluntary effort have initiated the work, which, serving as a demonstration, has quite logically been taken over eventually by local authorities. Such a multiplicity of child welfare organizations have been started and grown with such incredible rapidity that at present the varieties and complications of activities are confusing if not bewildering, and definite constructive state-wide plans are necessary for efficiency and standardization.

The first State Child Hygiene Division in the United States was not established until 1912 and during the following 5 years only 8 States organized to assume the responsibility for state-wide child welfare work. The period 1918 to 1920 was a record-making time, with an increase of 23 state divisions, while 3 newly-established divisions during the present year make a total of 34 states now organized to carry on child welfare activities on a state-wide plan.

STATE DIVISION OF CHILD HYGIENE AND CHILD WELFARE

State	Date and official name	Director
Louisiana	1912 Subdivision of Division of Hygiene	Miss Agnes Morris, State Board of Health, New Orleans.
New York	1914 Division of Child Hygiene	Dr. M. Edgar Rose, State Board of Health, Albany.
Kansas	1915 Division of Child Hygiene	Dr. Florence Brown Sherbon, State Board of Health, Topeka.
Ohio	1915 Subdivision of Child Hygiene in Division of Hygiene	Miss Natalie Merrill, State Board of Health, Columbus.
New Jersey	1915 Division of Child Hygiene	Dr. Julius Levy, State Board of Health, Trenton, N. J.
Massachusetts	1915 Subdivision of Child Hygiene in Division of Hygiene	Dr. Merrill E. Champion, State Board of Health, Boston.
Montana	1917 Child Welfare Division	Mrs. L. J. Reid, State Board of Health, Helena.
Illinois	1917 Division of Child Hygiene and Public Health Nursing	Dr. C. W. East, State Board of Health, Springfield.
Pennsylvania	1918 Division of Child Health	Dr. Ellen C. Potter, State Board of Health, Harrisburg.
Florida	1918 Bureau of Child Welfare	Dr. Wm. B. Keating, State Board of Health, Jacksonville.
N. Carolina	1918 Bureau of Public Health Nursing and Infant Hygiene	Miss Rose M. Ehrenfeld, State Board of Health, Raleigh.
Minnesota	1918 Division of Child Conservation	State Board of Health, St. Paul.
Arizona	1919 Department of Child Welfare	Mrs. C. R. Howe, State Board of Health, Phoenix.
California	1919 Bureau of Child Hygiene	Dr. Ethel M. Watters, State Board of Health, 511 Underwood Bldg., San Francisco.
Colorado	1919 Child Welfare Bureau	Mrs. Mary E. Holland, Ex. Sec'y, Department of Public Instruction, Denver.
Connecticut	1919 Bureau of Child Hygiene and Division of Public Health Nursing.	Miss Margaret K. Stack, State Board of Health, Hartford.
Georgia	1919 Bureau of Child Hygiene	Dr. Lydia Allen De Vilbiss, State Board of Health, Atlanta.

Idaho	1919 Division of Child Hygiene	Department of Public Welfare, Boise.
Indiana	1919 Division of Infant and Child Hygiene	Dr. Ada E. Schweitzer, State Board of Health, Indianapolis.
Kentucky	1919 Division of Child Hygiene	State Board of Health, Louisville.
Michigan	1919 Bureau of Child Hygiene and Public Health Nursing	Miss Harriet Leck, State Board of Health, Lansing.
Missouri	1919 Division of Child Hygiene	Dr. C. B. Knight, State Board of Health, Jefferson City.
Nebraska	1919 Child Welfare Bureau	Mrs. Emily P. Hornberger, Department of Public Welfare, Lincoln.
New Mexico	1919 Child Welfare Service	Dr. Sarah Coker, Department of Education, Santa Fe.
Rhode Island	1919 Division of Child Welfare	Dr. Elizabeth Gardiner, State Board of Health, Providence.
S. Carolina	1919 Bureau of Child Hygiene and Public Health Nursing	Mrs. Ruth A. Dodd, State Board of Health, Columbia.
Texas	1919 Bureau of Child Hygiene and Public Health Nursing	Mrs. Ethel Parsons, State Board of Health, Austin.
Utah	1919 State Department of Health Education	Dr. E. G. Gowans, Department of Public Instruction, Salt Lake City.
Virginia	1919 Division of Child Hygiene and Public Health Nursing	Dr. Mary E. Brydon, State Board of Health, Richmond.
W. Virginia	1919 Division of Child Welfare and Public Health Nursing	Mrs. Jean G. Dillon, State Department of Health, Charleston.
Wisconsin	1919 Bureau of Child Welfare and Public Health Nursing	Mrs. Mary P. Morgan, State Board of Health, Madison.
Maine	1920 Division of Public Health Nursing and Child Hygiene	Miss Soule, State Board of Health, Augusta.
Alabama	1920 Bureau of Child Hygiene and Public Health Nursing	Miss Jessie L. Marriner, State Board of Health, Montgomery.
Mississippi	1920 Bureau of Child Welfare and Public Health Nursing	Dr. Edith B. Lowry, State Board of Health, Jackson.

It is interesting in passing to note that though public health measures are so largely educational in character, these state child welfare divisions, with three exceptions, have been established under State Boards of Health, the exceptions being Colorado, New Mexico, and Utah, whose divisions are under Departments of Education, and Idaho and Nebraska, whose divisions are under Departments of Public Welfare, which presumably are substitutes for the regulation State Boards of Health. In Massachusetts, Ohio, and Louisiana the State Board of Health organization places child hygiene as a subdivision under departments of general hygiene.

While the pioneer work done in the 8 original state divisions undoubtedly helped to serve as a model for other divisions, it is the purpose of this paper to analyze in general the organization and different lines of approach which have developed in the more recently organized divisions. State undertakings have naturally varied with local conditions, which must serve as the foundation in developing work; therefore efficient organization from the beginning has been more or less dependent upon the extent to which previous child welfare activities had prepared the way.

The following topics serve to cover the general lines of development, which have been submitted in reports on state departments of child hygiene or child welfare:

Initial Survey.—Since intelligent action must be based upon an exact knowledge of existing conditions, a first step might logically be a preliminary survey of the state, made by personal visits or questionnaires, to determine existing agencies engaged in child welfare work and the character and extent of their work. Yet only in 6 states out of the 30 from which reports are available has the work been begun with a general census-taking of the state's activities dealing with child welfare problems. Two states limited their surveys to specific problems, namely, midwifery and

infant mortality, rather than general child welfare activities; while other states have undertaken surveys of communities or counties and concentrated efforts on these smaller areas, which were intended to serve as demonstrations for the rest of the state.

Budgets.—State appropriations for child-welfare divisions show a great disparity, New Jersey leading with \$150,000 as a 1920 budget and Idaho with only \$3,800 for two years' work. This wide range in state appropriations indicates to a certain degree possible undertakings, but this is not an invariable rule, for in Minnesota where a state appropriation was entirely absent the child welfare activities were taken over by the State Public Health Association in cooperation with the pediatric and gynecological societies of the state and most creditable work effected. In Missouri, where the legislature created a state division of child hygiene but made no provision for funds with which to develop and carry on the work, federal funds were made available, and, through effective cooperation, state-wide child welfare activities have been developed. Although figures or budgets have been reported from only a limited number of states, the available data point to the fact that a number of the newer state child hygiene divisions which are best organized for effective work are functioning on initial budgets of \$10,000 or \$12,000 for their first year. Obviously larger appropriations are necessary to develop satisfactorily any state-wide plans, but the possibilities for beginning active work even on limited funds are well demonstrated by the majority of state divisions, and increasingly large appropriations will follow in natural order.

Organization.—A director and office secretary appear to be the only constant members of staff personnel. Other members are assistant director, supervising and public health nurses, organizer, child welfare visitor, lecturer, educational secretary, etc.

Adoption of Standards for Working Basis.—In a number of states, after a preliminary survey of activities, the Children's Bureau's Minimum Standards for Public Protection of the Health of Mothers and Children have been adopted and used in outlining work. While the realization of these standards is a distant goal in many states, Kansas is making an interesting demonstration through its State Women's Committee, which is organized in fifty counties and is measuring the present condition of Kansas children by these standards. The survey is general, covering all interests of children; namely, health of mothers and children; dependent, defective, and delinquent children; and children in industry. A series of club study outlines has been based on the standards and the Women's Bar Association is making an index to Kansas laws relating to women and children.

Standardization of Legislation.—Health legislation very definitely intersects all child welfare activities in many interesting ways as shown in laws on eugenics, birth registration, midwifery, ophthalmia neonatorum, boarding homes, institutional care, maternity benefits, mothers' pensions, social insurance, etc.

In several State Child Welfare Divisions popular demand for information regarding existing laws affecting the welfare of children has made necessary a survey of such laws, setting forth their inadequacies and limitations, and the need for new legislation to accord with progressive development. So-called "Children's Codes Commissions" have been organized in 18 states and the District of Columbia, and are functioning, not in the ordinarily accepted meaning of the term code, a digest of laws, but covering general existing conditions affecting children and purposing to coördinate and supply laws and administrative agencies to handle various aspects of child welfare that are handled inadequately or omitted. Laws on birth registration and midwifery are the ones

which have been given special prominence in state child hygiene reports.

The plan of the New Jersey State Child Hygiene Division serves as an excellent example of how, through coöperation, extra-official agencies can be utilized to further desired legislation. In coöperation with the State Child Hygiene Division and the State Bureau of Vital Statistics, the Women's State Council of Child Welfare through its county chairmen has conducted a state-wide birth registration campaign, with the ultimate aim of putting New Jersey in the birth registration area. Of the 34 states now organized for state child welfare work, 15 are still not included in the birth registration area. Not only is birth registration of primary importance for records of vital statistics, but early and accurate notification forms the nucleus around which centers all infant welfare activities.

Although 5 state departments appear to be actively attacking the problem of midwifery, South Carolina and New Jersey reports conspicuously emphasize improved legislation making training, supervision, and licensing of midwives compulsory.

Obviously, standard legislation and enforcement of it, is fundamental to any child-welfare program, and all efforts at legislative standardization, if not initiated by, should at least be very closely correlated with State Child Welfare or Child Hygiene Divisions.

Education.—Although public health and preventive medicine are primarily educational in character, child welfare is concerned with the specific education of parents and children.

Popular methods of carrying out child welfare educational activities have been participated in by all 34 functioning state child welfare divisions and practically uniform methods used which may be grouped as follows:

(1) Publicity, through press, pulpit, literature, lectures, slides, films, etc.

(2) Campaigns, such as health week,

birth registration day, Baby-Week, Children's Year, etc.

(3) Exhibits.

(4) Classes for mothers, Little Mothers' Leagues.

(5) Health Centers.

Probably today there is no state in the Union which cannot boast of a varying number of health centers, most of which have been developed under or in coöperation with its State Child Welfare Division and local or national organizations. In fact, the health center today figures as the objective in many phases of child welfare work and as developed in many communities is, strictly speaking, a community-educational center whose functions are not only to advise on the hygiene of the child but to conduct classes for teaching mothers as well.

Curiously enough, our early health centers were usually called infant welfare centers, and provided for the care of children only during the first one or two years of life, but as child welfare work has expanded we find many consultation stations and organizations changing their names to more inclusive terms covering the entire period of childhood. Need for periodic physical examinations, hygienic advice, and supervision of the preschool child is now considered quite as important as similar assistance during infancy. The possibilities for development in child welfare activities through such centers is only partially indicated by such developments as infant feeding classes, nutritional classes, prenatal work, dental care, etc. Increase in clinical and hospital facilities must ultimately form the link in the chain by making adequate care available to all mothers and children.

Coincidentally with the development of the health center has been the development of public health nursing work. Additional teaching of mothers in their homes as well as in centers has been found necessary to secure the best results, and here lies one of the greatest opportunities for the public health nurse.

Public health nursing, like other phases of public health, is essentially educational and is fundamental to the success of the child welfare movement.

During the past few years many Public Health Nursing Divisions have been formed in State Departments of Health. In 12 states, Illinois, North Carolina, Connecticut, Michigan, South Carolina, Texas, Virginia, West Virginia, Wisconsin, Maine, Alabama and Mississippi, public health nursing divisions have been combined with child hygiene. In many instances this arrangement is only temporary, pending adequate appropriations allowing for directors of separate divisions.

A distinct directly educational approach in promoting child welfare is being made, either coincidentally with or entirely apart from other activities, through existing educational channels, such as normal schools or other schools graduating teachers, and teachers' institutes. New Mexico, Virginia, and South Carolina reports especially emphasize this training of teachers, and several other states have prepared hygiene courses for use in elementary schools. Undoubtedly this line of approach is a logical one in many states where general public health work is in its infancy and where the school machinery is the only available organized institution through which to work. The need for the standardization of school hygiene has been given recognition in several states, where uniform record cards for physical examinations have been made in coöperation with the Department of Education.

Statistical Studies.—Careful analysis of the vital statistics of the state to determine the areas of greatest child mortality and morbidity is an effective method of visualizing local conditions with a view to stimulating interest.

The infant mortality rate is considered today to reflect the intelligence of the people of a community, hence careful statistical studies in all the State Child Welfare Divisions could be profitably

made. Differentiation of stillbirths, premature births, deaths under one week and under one month affords a fruitful field in this country.

Research.—Only one state child hygiene division has reported research work as one of its functions. This study is on gastro-intestinal disorders of children and is undertaken in coöperation with three other state departments. It is planned to make continuous observations on a large number of infants in communities of various types for a period of some months. The study will include housing, sanitation, clinical observations, laboratory analyses, with a final careful study of data obtained.

The field of research as a necessary adjunct to a state child hygiene division is practically unexplored, and presents unlimited possibilities of correlation between child welfare and venereal disease, tuberculosis, and other communicable diseases, infectious diseases, stillbirths, and kindred subjects.

Coöperation.—A study of the organization charts of state and municipal child hygiene or child welfare divisions emphasizes not only the relative importance and signal pre-eminence which such state departments hold, but also shows the many lines of coöperation essential to the success of any state child welfare program. For effective service, mutually stimulating coöperation should exist between the child welfare or child hygiene division and the other state board of health divisions, namely: Vital Statistics, Laboratory, Communicable Disease, Sanitary Engineering, Social Hygiene, Public Health Nursing, Tuberculosis, Industrial Hygiene, etc. Among the state coöperating agencies are the State Department of Public Instruction, Board of Charities and Corrections, Board of Control, Department of Agriculture, Medical Association, Dental Association, Health Officers' Association, Tuberculosis Association, American Red Cross, University Extension, and Women's Organizations.

The topics in this paper are from ne-

cessity considered only along very general lines. Many state plans in detail are truly inspiring and promise excellent results. A bird's eye view of present child welfare activities shows a definite focusing of action on later infancy and the preschool period (through health centers) and on the school period, leaving the extreme periods of child life, early infancy and the industrial period practically untouched.

It is singular that action has so slowly extended toward the point at which it should have logically begun — eugenics and prenatal care; since health in infancy in a large measure determines the general health standard of the whole of life. That the general downward trend in infant mortality is not due to fewer deaths during the first month of life, calls for definite action centered on the protection of the infant by ensuring the welfare of the mother during pregnancy, confinement, and the lying-in period. Only 9 of the state child welfare divisions have reported definitely as doing prenatal work, which has consisted chiefly of distribution of literature, a series of prenatal letters being used in 4 states. One state division reports coöperation with its State Obstetrical Society for the purpose of developing prenatal clinics. While pediatricists are now stressing breast feeding as the most important single factor in the reduction of infant mortality only two state reports have emphasized this important subject. Such facts indicate some essential aspects of the problem which must be faced and solved. Federal stimulation and financial assistance to meet the problem of early infancy are embodied in the Sheppard-Towner Bill, known as a bill for the protection of maternity and infancy, now before Congress.

The examinations for the draft, and the causes for rejections, aroused a notable interest in health and hygiene. Health at all ages of life is now a matter of general interest. It is significant that

even lay persons were struck by the fact that most of the disabilities causing rejections in the draft might have been corrected in infancy or early childhood. In 1912 there was one state division of child hygiene; in 1920 there are 34. These

figures indicate that at last we are realizing that child hygiene is the most important of all hygiene; that child welfare is the welfare first to be considered; that a child hygiene division is the center, the focus, of state public health work.



NOVA SCOTIA'S HEALTH CARAVANS

Here is Health Caravan No. 1 in charge of Dr. Edgar Douglas leaving Provincial Red Cross Headquarters via Sam Slick's residence at Windsor, headed for Evangeline country, the Gaspereaux, Cornwallis and Annapolis Valleys, thence through the municipality of Clare, where direct descendants of the returned Acadians dwell. This is one of two caravans leaving Halifax to tour Nova Scotia, and after rounding the southwestern tip of the Province will journey northward along the southeast coast for a distance of four hundred miles, holding educational, diagnostic and operative clinics, and moving picture shows, in all important and central fishing villages. A duplicate caravan goes along the northern shore of Minas Basin, the south shore of Northumberland Straits, through Cape Breton and the coal fields adjacent to Louisburg and other fishing villages in the far north and east. The shabby ambulance in the rear of the caravan is a war veteran, which has been purchased by the school children of Nova Scotia. It served on the battlefields of France where it carried thousands of wounded to the rear. The damage to the ambulance cover was received on the battlefield.



INDUSTRIAL HEALTH EDUCATION—A MEANS AND AN END

JULES SCHEVITZ, B.S.

*General Secretary, Oklahoma Tuberculosis Association
Oklahoma City, Oklahoma*

Read Before Industrial Hygiene Section, American Public Health Association, at San Francisco, Cal.,
September 15, 1920

If health officers were backed in their work by business men they would no longer worry about inadequate appropriations or political interference. Business men already know the economy of health in the factory. It is the duty of industrial hygienists to furnish the missing link and educate the business man to the value of bettered public health to his factory and himself.

THE past ten years have witnessed a remarkable advance in the movement for the promotion of the health of the worker. The experience of large and small industrial enterprises has revealed the value of this movement, both from the point of view of reduction in amount of illness among the workers as well as in increased efficiency and production in the plant.

The first aid, accident prevention and safety first campaigns, were the logical forerunners of the modern industrial hygiene movement, and it was only natural that employers of labor recognizing the value of these earlier life-saving measures, agreed to try out the more constructive program of medical, surgical, nursing and other welfare services.

While the motives of the employers of labor may not have been primarily altruistic, great credit is due these leaders of enterprise who by their vision and far-sightedness were able to stimulate the entire industrial health movement to such a marked degree. More recently public and private agencies have become interested in the movement for the health conservation of the workers. Divisions of industrial hygiene in state and local health departments have been most active along these lines. These agencies have

been able through education and by other means to interest an increasingly large number of employers to institute the methods of health conservation so successfully administered in other plants.

Contact with the head of industry is a valuable opportunity accorded many industrial health workers. If, in addition to proving to the employer that the expenditure for the administration of complete medical, nursing and welfare services is a good investment, paying large dividends, the health worker will attempt to win over the business man to the cause of health promotion outside of industry, he has done something which may in the long run be of greater service to humanity than the introduction or expansion of a health service in one particular plant.

What most health workers have been doing in the past has been to consider industrial health solely as an end in itself, namely, the prevention of occupational diseases and the promotion of the health of the worker. We apparently have been satisfied in accomplishing this end, and have gone no farther. Of equal, if not greater, importance to the entire public health movement is the capitalization of this demonstration to the employer and business man, that disease can be prevented, that health can be pur-

chased, and that the same constructive methods will prove equally effective in the general health campaign. In other words, after having demonstrated the value of industrial health as an end in itself, why not use this demonstration as a means of gaining the enlightened and influential support of the business interests of this country in the general health campaign?

An experiment of the Oklahoma Tuberculosis Association in the field of industrial health—as a means and an end—will illustrate the advantages to be gained from such an effort. The Oklahoma Tuberculosis Association is a voluntary health organization engaged in a statewide campaign of public health education, including an effort to stimulate business and professional men, state officials, commercial and civic organizations in the public health campaign.

Fortunately for the organization, from its very inception it has had the guiding influence and helpful supervision of business men of the highest order—men who apply to the conduct of this health organization the same sound business principles regularly used in their own successful enterprises. The longer these men were associated with the state association, the more pronounced were their convictions that the enlightened interest of the business and professional men was essential to an effective and well-supported public health program. This applies equally to the official health agency as it does to the voluntary organization.

The purposes of the experiment referred to above are two-fold—to prove to the business man that health conservation methods applied to his own industry mean a saving in man-power with consequent increase in production and efficiency, and second, when this is accomplished to enlist the interest of the business man in the general health campaign. First, we approach him on his own ground and talk to him in his own language, and later having obtained his confidence, the opportunities in the

broader public health field are presented to him.

An industrial health secretary carries on a health educational program in industry by means of talks to employees, distribution of literature in plants, "Health First" posters on bulletin boards, exhibition of motion pictures, and display of special exhibit material. This educational work is well received by the employer and may be the first step in bringing about the introduction of a complete industrial health service. In most instances, this is the employer's first contact with any public health work, despite the various forms of private and official health work carried on in his own community. He expresses a desire to co-operate in the educational campaign in his own plant and evinces interest and surprise when informed of the activities of the local health agencies. One frequent outcome of these dealings with the employer is the gaining of an additional supporter in the general health campaign. This may take the form of his definite affiliation with a voluntary health organization or leadership and interest in health committees of commercial and civic organizations.

These new contacts are carefully followed up by correspondence from the state office, by bulletins of particular interest to the employer, by our monthly health journal, the *Pow-Wow*, and as often as possible by personal interviews with officers and members of the staff of the state association. We have always maintained the attitude that the health campaign is of sufficient importance to command the attention and time of the highest type of business and professional men in the community, and have consequently selected the busiest and most influential persons to align themselves with us in our work.

At the coming State Public Health conference, we are planning to conduct a special "Business Man's" health session, dealing with the relation of the business man to the health movement, and we are

hoping to have a very encouraging attendance as a definite sign of the business man's interest. With health playing such a vital part in community life and so thoroughly interwoven with commercial and civic advancement, it is only proper that the business interests should lend their best efforts to the health movement. This session will be attended by leading employers and business men and representatives of civic and commercial organizations in the state. The business man will be made to feel his responsibility and the need for his close coöperation in the health campaign. As a further effort to draw the business interests closer to the health movement, it is planned to have the question of health discussed before various commercial gatherings in the state.

Applied on a larger scale, this would mean that representatives of large business interests will take a part in national health gatherings and representatives of health organizations will participate in the programs of commercial gatherings. Such a relation would bring the question of health to the fore in public attention and among other results we may expect political conventions and legislative bodies to think of health as a live issue not to be cast aside until expediency deems otherwise, but to be considered along with other important national and state questions.

Local and state health departments are the constituted and recognized authorities for the protection and improvement of the public health. It should require no great array of facts to prove that the efforts of these agencies in the health campaign are very much handicapped and the attainment of their goal greatly delayed without the thorough understanding and whole-hearted coöperation of the business and professional interests of the country. We are all familiar with numerous instances of health laws and regulations unenforced because they lack the support of an enlightened public opinion. We can all point to health departments, local, state and even federal, that are trying to meet problems of the greatest magnitude with a mere stipend granted by the governmental bodies.

With the assistance and backing of business men, health departments will no longer have to worry about inadequate appropriations and political interference. The enforcement of health laws will be demanded instead of discouraged, and the campaign of public health education will take a long step forward.

To the industrial health worker is presented this excellent opportunity for advancing not only the industrial hygiene movement but the entire public health campaign. Will he take advantage of this opportunity?



Child Welfare Work in Belgium.—A national children's bureau has been established in Belgium. The bureau is directed by a board of forty members, called the "Conseil superieur des oeuvres de l'enfance." This board has the decision on all questions relating to the protection of children; it issues orders concerning the functions of subsidized agencies; it takes necessary measures for the protection of children within the limits of the law; and determines the use of funds at the disposal of the bureau.—*Journal A. M. A.*, April 24, 1920. (J. A. T.)

Electrical Purification of Air.—The possibility of precipitating liquid or solid particles floating in air has been appreciated for some time. An experimental bacteriological application of this fact was made by submitting to a current of 50,000 volts, air polluted with a homogeneous mineral powder in which had been seeded a culture of *Micrococcus prodigiosus*. This air was found to be sterile whereas the neighboring atmosphere showed a mean bacterial count of 150 colonies per cubic meter.—D' Arsonval, et al. *Revue Sci.*, March, 1920.

TRUTH IN ADVERTISING DRUG PRODUCTS

ARTHUR J. CRAMP, M. D.,

*Director of Propaganda for Reform Department, Journal of the American Medical Association,
Chicago, Ill.*

Read before the Food and Drugs Section, American Public Health Association, September 16, 1920,
at San Francisco, Cal.

Advertisements of patent medicines are not controlled by law, although the labels on the boxes and bottles are, to some extent. Statements made in patent medicine advertisements are often notoriously exaggerated. Dr. Cramp asserts that, so long as the individual can have proprietary monopoly in his product, it is hopeless to expect truth in the advertisements.

ADVERTISING as we know it to-day is a thing of recent development. The advertisement of 1920 differs widely from the advertisement of 1820, and even of 1880; it differs not only in its appeal, but in its intent. In the earlier day the advertiser was usually content to notify the public that he was in a position to supply certain of its demands. The modern advertiser goes much further. He does more than aim to supply a demand; he actually creates a demand. Twentieth century advertising may be said to be the art of awakening in the public a demand for things which, otherwise, it might not even know about, and for which it certainly has no craving. It is this changed conception of what constitutes legitimate advertising that has made some thoughtful students of the subject seriously question whether there is any proper excuse for advertising products that are used in the treatment of human ailments. One may produce plausible economic arguments in favor of such advertising, applied to ordinary merchandise, as will make the public buy more of these commodities than it actually needs or can properly afford. But there is nothing to be said in favor of so advertising drug products as to stimulate a demand for them in excess of their legitimate need.

THE DEMAND ELEMENT IN MODERN ADVERTISING.

The present trend on the part of many by no means unintelligent people toward the various so-called drugless-healing cults or fads is the not unnatural reaction to the over-drugging of the public, both by the public itself and by physicians. And this over-drugging has been brought about largely through the power of modern advertising. The use of drugs in the treatment of many human ailments is, in the present state of human knowledge, necessary, but there is no excuse for stimulating the use of drugs beyond the point where they are very definitely indicated. Yet that is exactly what must happen if the sale of drug products is to be stimulated in accordance with the tenets of modern advertising.

The advertising director of a large pharmaceutical manufacturing house recently contributed an article to a magazine devoted to the art of advertising. In explaining the method employed by the manufacturing pharmacist for stimulating a demand on the part of the physician for drug products, he said:

"He gets out expensive 'literature.' He advertises freely in the medical journals. He sends out letters and pamphlets through the mails. He trains a staff of 'detail men' and

has them call personally on physicians. Other ways and means are employed with intelligence and discretion to create a demand among physicians for the new and improved products of the manufacturer."

Should the physician's experience and study tend to cause him to use drugs less and other therapeutic aids more, the advertising campaign of the pharmaceutical manufacturer may be counted on to counteract this tendency. Of such advertising the authority just quoted said:

"It keeps alive the practitioner's confidence in medicinal agents. It defeats the tendency frequently exhibited toward therapeutic nihilism."

The modern advertisement, then, is "selling copy"—an appeal that creates a demand—rather than "offering copy" or the mere notification of where already existing demands may be filled. But there is a further factor that puts the advertising of drug products on an entirely different footing from that of the advertising of other merchandise. As has been pointed out elsewhere¹ the man selling drug products has a tremendous advantage over the man selling ordinary merchandise. The seller of shoes, pianos or automobiles has Nature as his antagonist; wear and tear will show the purchaser whether or not he has been defrauded. But the exploiter of drug products has Nature as an assistant; the purchaser is seldom, if ever, able to be sure whether any beneficial effect that may follow the use of certain medicaments is due to the drug or to the healing power of Nature itself. The human mind is so constituted that it is much more prone to give credit to artificial agencies (in this case drugs) than to natural agencies; the seller of drugs reaps the benefit of this common weakness.

CLASSIFICATION OF ADVERTISED DRUG PRODUCTS.

As a convenient, although arbitrary

classification, drug products that are advertised may be grouped thus:

- GROUP 1: Non-proprietary pharmaceuticals; official or semi-official in character.
- GROUP 2: Scientific proprietary products advertised to the medical profession for prescribing and dispensing purposes.
- GROUP 3: Unscientific proprietary products nominally advertised to the medical profession for prescribing and dispensing purposes.
- GROUP 4: Proprietary products advertised to the public as home remedies for the self-treatment of disease; colloquially, "patent medicines."

GROUP 1: Advertising of medicaments in this group can be dismissed in a few words. The products being non-proprietary in character, non-secret in composition, their standards of strength and purity being constant and maintained by state and national laws, the advertisements are likely to be of the "listing" or "offering" type only. Such products are made by most of the large pharmaceutical houses of the country, and in the nature of the case there can be no element of monopoly in their manufacture. Competition thus assures sale at a financial return so small as to make it unprofitable for manufacturers to spend any large amount in an advertising campaign for the purpose of increasing the sale of the preparations. It is true, of course, that even this group gets the benefit of that human weakness of mistaking sequence for effect. This must be true of all drug products, even if they were not advertised at all, and in effect this peculiarity of medicaments is in itself advertising — inherent, silent and subtle.

¹ Cramp, Arthur J.: Modern Advertising and the Nostrum Evil, *Am. Jour. Public Health*, October, 1918, p. 766.

GROUP 2: The scientific proprietary products advertised exclusively to the medical profession and comprising the second group will be found to rank in what may be called the highest class of "selling copy" advertising. The past twenty-five years has brought a marked change in the character of advertising of products of this class. A quarter of a century ago the medical profession was less critical of the claims made for products of this sort than it is today. It would accept with fewer questions the statements made by high-class manufacturers for their scientific drug products. On the other hand, the professional advertising "copy writers" had not been developed, and there was not, therefore, that tendency to exaggeration that exists under the modern system. The old-time advertisements, while based on less critical data than those demanded today, were comparatively free from the bombast and ill-suppressed hyperbole of the advertisements in the better class modern medical journals. In general, however, it may be said that the products making up Group 2 have, with a few exceptions, always been advertised with a due respect to truth.

GROUP 3: As might be expected, products in this group, unscientific products advertised to physicians, are advertised with little regard for scientific accuracy. The products themselves being unscientific and the manufacturers having a practical monopoly under our trademark law, there is every reason to expect exaggeration and misrepresentation in their sale. The advertising appeal is adapted, naturally, to the clientele to which the manufacturer caters. This nominally is the physician of the less discriminating type; actually, it is the layman reached through the physician. For this reason the preparation is put up in some distinctive form. The physician is always urged to prescribe the "original bottle," the inference being that otherwise a dishonest druggist will substitute some other preparation. The original

bottle, and the "literature" that accompanies it, coming into the hands of the layman convinces him that he is as competent to prescribe the preparation as the doctor himself.

Such physicians as prescribe unscientific proprietaries are satisfied with unmeaning generalities relative to the composition of such products. A few years ago, before the medical profession had been aroused to the fact that many published formulas for proprietary remedies were utterly fraudulent, it was no uncommon thing for manufacturers of this type of medicaments to publish formulas which were either meaningless or bore no relation to composition. Some would even give weird and imposing structural chemical formulas for their products; these, while laughable to chemists, might be counted on to mislead many physicians. All medical men in theory, and the better educated and more scientific members of the profession in fact, refuse to prescribe products whose composition is secret. There are, nevertheless, enough careless and thoughtless doctors to support a vast industry in these products of Group 3, many of which are essentially secret in composition. Many of these medicaments are little better than what are known colloquially as "patent medicines."

FACTORS MAKING FOR TRUTHFULNESS

Then began the campaign of education by *The Journal of the American Medical Association*, aided by the association's "Council on Pharmacy and Chemistry" and the findings of the Association's Chemical Laboratory. A year or two after *The Journal* began its propaganda for reform in proprietary medicines—an educational force that it continues to this day—there was born that great power for comparative righteousness in the drug field, the National Food and Drugs Act. The latter laid the manufacturer who made false statements regarding the composition of his preparations open to prosecution—provided he made these statements on or in the trade package.

The result of these two forces, so far as they affected statements of composition of products in this group, was the elimination by the manufacturer of all specific statements bearing on this point. In some cases, however, where the medicaments contained one of the few drugs whose presence the national law requires to be declared on the label, there were brought about some curious verbal gymnastics. A widely advertised so-called medicated wine had been specifically advertised as not a cocaine preparation; following the passage of the pure food law a legend appeared on the label to the effect that each ounce of the preparation contained a stated amount of cocaine. Another unscientific medicament, which before the law went into force was recommended to physicians on the ground that by using it they could "avoid acetanilid poisoning," was forced to declare the presence of acetanilid. Various proprietary products alleged to be cod-liver oil compounds, but which, in fact, never contained any cod-liver oil, were forced by the exigencies of the Food and Drugs Act to be rechristened. A number of most ordinary mixtures of simple, well-known drugs, which, previous to the passage of the act, had been exploited as synthetic compounds of awe-inspiring chemical complexity, toppled from their high estate and the new trade packages were suspiciously silent on the subject of composition. In not a few instances products which, up until the time of the Food and Drugs Act, had been advertised exclusively to the medical profession for alleged prescription purposes only, immediately went over into the "home remedy" or "patent medicine" field. This was largely due to the fact that prosecutions under the new law verified the disclosures already made by *The Journal of the American Medical Association* so that even the uncritical physician was forced to reject the product because of its obviously unscientific character.

THE UNINFORMATIVE TRADE PACKAGE.

In advertising preparations of this sort today the method is to say as little as possible about the composition or therapeutic action of the products, in or on the trade package. The advertising of a "selling copy" type is confined almost exclusively to those fields that are not subject to the legal restrictions of the Food and Drugs Act, such as the pages of commercially owned and operated medical journals. It is the advertising receipts from these products that keep alive a number of so-called medical journals whose demise would be a benefit alike to scientific medicine and the public. The chief advertising asset of products of this sort is the testimonial, or, as it is more euphemistically termed, the "clinical report." These reports are descriptions of uncontrolled experiments from uncritical men. As scientific evidence, they have no more value than the testimony of the layman for the newest quack panacea.

The manufacturers of drugs of this group, while saying as little as possible regarding the composition of their products, attempt to shroud in mystery what little they do say. A widely advertised proprietary poultice whose chief ingredient is dried and finely powdered clay, is described as being composed of "anhydrous and levigated argillaceous mineral." A certain brand of aspirin is described, not as acetylsalicylic acid, but as "the monoaceticacidester of salicylic acid."

GROUP 4: In this group—proprieties of the home remedy type, or the so-called "patent medicines"—truth in advertising is conspicuous chiefly by its absence. All the elements that foster falsehood and exaggeration in the advertising of the drugs in Group 3 are present in this group, with the additional element of a purchasing public which is totally indiscriminating because of its ignorance of the elements involved. As the purchaser of products of this group is also the user, there is added a factor

which has brought discredit and disrepute on the entire "patent medicine" industry. That factor is fear through suggestion. Unscientific and misleading advertisements of the drugs in Group 3 cannot be charged with having directly affected the persons who take these drugs. Not so the advertisements of products in the present group. The "patent medicine" maker flourishes by playing on the fears of the public. As one nostrum maker put it, in a burst of candor, when urging druggists to stock his product:

"Fully 75 per cent. of all cough and kidney remedies are bought by people who THINK they have consumption or some serious kidney ailment . . . and not by people who actually have them."

When John Doe pays a dollar for a bottle of Dr. Quack's Quick Cure he does not realize that from one-half to three-fourths of his dollar goes to pay for the manufacturer's efforts to convince him that he is suffering from some ailment for which the Quick Cure is a panacea. The least expensive thing about the average "patent medicine" is the medicine. The most expensive thing is the advertising which creates the market for the medicine. As one "patent medicine" maker, high in the councils of his organization, once put it:

"The twenty thousand newspapers of the United States make more money from advertising the proprietary medicines than do the proprietors of the medicines themselves. . . . Of their receipts, one-third to one-half goes for advertising."

Here one has, then, out of the mouths of those who know, the admission that fully 75 percent. of those who purchase certain types of nostrums are merely neurotics who *think* they are suffering from the ailments that these nostrums are supposed to cure. From a similarly authoritative source comes the admission that from one-third to one-half the cost of a "patent medicine" goes for newspaper advertising alone; to say nothing of the cost of the millions of

"almanacs," window displays, circulars and other publicity features used in the business. It is no far-drawn inference that the three people out of every four who purchase "patent medicines" because they *think* they are ailing have been made to so think by the vast and utterly disproportionate sums spent on advertising these nostrums.

THE ADVERTISING APPEAL.

In advertising "home remedies" the style is adapted to the clientele sought. To the intelligent neurotic a subtle and cleverly worded appeal is made to convince him that a glorified cottage cheese mixture originating in Germany, patented and sold under an imposing trademarked name, is a "re-creator of lost health" with "specific nerve tonic action." To the farmer a cruder message is carried. "Scare" pictures "tell the story" that every passing soreness in the lumbar region is a symptom of incipient Bright's disease, for which "kidney pills" of a certain brand are a sure-fire remedy. To the tired housewife comes the alluring vision of new energy to be derived from some Female Tonic of alleged vegetable origin, whose virtues as a "repeater" are really due to the very definite alcohol content of the nostrum and the very indefinite promises of the exploiter. Still cruder is the picture conjured up in the mind of the youth with thoughts dwelling abnormally on his sexual apparatus, by the fearsome and horrific descriptions that make up the advertising stock-in-trade of the exploiter of nostrums for "lost manhood."

Yet even in the "patent medicine" field there has been improvement in advertising. The very stench of this Augean stable of the advertising world has resulted in some effort to cleanse it. Three factors have been potent in bringing about some betterment in the advertising ethics of the makers of home remedies. First, the searchlight of publicity turned on the business by the medical profession through *The Journal of*

the *American Medical Association* and other medical publications, as well as by some of the better lay magazines and papers. Second, the activities of the federal authorities in enforcing the National Food and Drugs Act. Third, the work of the Better Business Bureau of the Associated Advertising Clubs of the World and of other organizations interested in truthful advertising and alive to the fact that every fraudulent advertisement menaces all advertising by destroying public confidence.

ELEMENTS OF REFORM.

The first factor—public education through publicity—while slower in its action, is more lasting in its results. With all due respect to the opinion of the late Mr. Barnum, the public does not like to be humbugged. It is humbugged to the extent that it lacks knowledge, and in the realm of therapeutics the public's ignorance is broad and deep. By turning the light on the methods of the nostrum vendors, by lifting the veil of secrecy which is the "patent medicine" maker's chief asset, the medical profession has given facts which have sunk deep into the public consciousness and which the public has not failed to take to heart. The Food and Drugs Act, which prohibits "false or misleading" statements regarding the composition or origin of a drug product and "false and fraudulent" therapeutic claims has done much to remove some of the cruder falsehoods. Its weakness lies in its limitations which confine its penalties to the statements made in or on the trade package. The newspaper advertisement, the "almanac" or the circular, in fact the very publicity avenues that sell the "home remedy" are, in fact, subject to no law regarding the truth or falsity of the claims made. It is true that, theoretically, most of the states have on their statute books laws prohibiting fraudulent advertising, but, insofar as these laws apply to "patent medicine" advertising

copy they are to all intents and purposes a dead letter.

But the federal law has brought about marked changes in the trade package. An "Indian Cough Cure" which was neither "Indian" nor a "cure," becomes a "Cough Remedy." A "Cure for Consumption" becomes "A Medicine for Coughs, Colds, etc." A "Walnut Juice" hair dye, which contained no walnut juice, becomes a "Walnut Tint" hair stain. A "Sure Cure for Falling of the Womb" becomes a product that is merely "Recommended for the Treatment of Non-Surgical Cases of Weaknesses and Disorders of the Female Generative Organs." An "Infallible Remedy for Consumption" becomes, by virtue of the power of the federal government, a mere "Tonic Appetizer and Aid to Digestion."

The change in many instances has been, it is true, a change in the letter rather than in the spirit. The "lie direct" has been discarded for the "lie with circumstances." Inferential rather than direct falsehood characterizes many of the claims on the trade packages today. In other avenues of advertising not subject to the penalties of the Food and Drugs Act there is many a fraudulent claim. One can with almost mathematical accuracy determine the falsity of modern "patent medicine" advertising: Subtract the claims made on the trade package from those made elsewhere; what remains—and the residuum will be large—is falsehood!

SUMMARY.

Summed up, it may be said that the advertising of non-proprietary drug products is invariably truthful and conservative; the advertising of scientific proprietary drug products sold for prescription purposes only also, in general, conforms to the truth, with occasional lapses due to over-enthusiastic copy writers. The advertising of unscientific proprietary products offered nominally to the medical profession, but virtually to the public, is invariably exaggerated

and misleading and, in some instances at least, fraudulent. The advertising of proprietary products offered directly to the public, that is, of so-called "patent medicines," is notorious for its untruthfulness, not alone in its declaration, but also in its inference.

What is the remedy? For the untruthful advertising of drug products of Group 3—unscientific mixtures offered nominally to the medical profession—relief must be looked for in the better education, and its accompanying discrimination, of the physician of the future. The higher standard of medical education, both in the medical course itself and in the pre-medical educational requirements, will in time automatically bring about the extinction of the unscientific proprietary remedy offered to the medical profession. These factors are already at work. Each year shows a diminution in the number of drug products of Group 3. They either go out of existence entirely or frankly join the ranks of Group 4, the "patent medicines."

The outlook for any radical change in advertising methods of Group 4—the "patent medicines" is not, from the standpoint of public interest, so hopeful. The education of the public will continue to bring about a toning down of the cruder claims made for "patent medicines," and this agency for reform will be aided by

the forces at work in the advertising field making for greater truthfulness. The fundamental evil of the "patent medicine" business will continue to exist, however, so long as proprietaryship and secrecy of composition continue as the controlling factors of the industry. Every physician knows that the number of drugs or drug combinations that are needed to fill the legitimate need for self-treatment on the part of the public is extremely small, and such needs can be amply filled from official products already on the shelves of every druggist in the country. The place of the hundreds of laxative "patent medicines" now on the market could be filled adequately, and with greater safety, by half a dozen official drugs. The same holds true for "patent medicines" sold for other conditions that come within the scope of legitimate self-drugging. So long, however, as the individual putting out a "patent medicine" has a proprietary monopoly in his product, he must as a commercial proposition stimulate the sale of his preparation, first, by making claims that are wholly unwarranted, and, second, by creating an artificial demand for his particular preparation by playing on the fears and imaginations of the public. Under such conditions it is hopeless to expect anything approximating truth in advertising.



Sanatorium Treatment of Tuberculosis.—

The author defines the conditions under which the sanatorium can carry out its functions to the best advantage and produce good results.

(a) The cases admitted should be either in an early stage of the disease, or, if more advanced, have been found by observation in a chest hospital to have a reasonable prospect of being made fit for work. (b) Treatment should be prolonged, either in the sanatorium or first in the sanatorium and then in the

colony. Instead of two, three or four months, the recognized period of institutional treatment should be six, twelve or eighteen months.

(c) The patient should be free from financial worry regarding the maintenance of his dependants during his treatment. (d) Some relief to the inevitable monotony of sanatorium life should be afforded by well directed schemes for providing a choice of congenial occupations for the patient, preferably one from which he can derive some financial benefit himself, or by which he can earn his living.

GEOGRAPHICAL AND SEASONAL VARIATIONS IN INFANT MORTALITY IN THE UNITED STATES, 1917-1920

FREDERICK S. CRUM, PH.D.

*Assistant Statistician, The Prudential Insurance Company of America,
Newark, N. J.*

Read before Section on Vital Statistics, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

How to reduce infant mortality is one of the most pressing health problems of today. More babies saved means larger adult population. Dr. Crum establishes standards whereby to measure future improvement. His charts disclose irregularities related to season or location. They suggest means of closer study through separation of racial statistics.

THE present paper is a partial revision and continuation of the paper entitled "Infant Mortality in the United States During One Year of War," which was read before the Vital Statistics Section, American Public Health Association, at Chicago, December 11, 1918, and published in the American Journal of Public Health, Vol. IX, No. 4, April, 1919. In the meantime, the 1920 populations of the 46 cities included in the earlier and the present papers have become available and the estimates of infant populations made in 1918 have been revised on the basis of the new, official Census figures. The changes affect principally the four cities included in the Central Atlantic group and the seven cities included in the Western group. For the Central Atlantic group, as a whole, the population estimates made in 1918 were too low, making the infant mortality index* too high; and the population estimates made in 1918 for the Western

group, as a whole, were too high, making the infant mortality index too low.

The revised basic index (no index for any week of the normal year 1917-1918 falling below this figure) for the Central Atlantic group of cities is 90.0 as against 100.0 according to the earlier estimate; and the revised basic index for the Western group of cities is 55.0, as against 50.0 in the earlier estimate. A comparison of the charts in the earlier papers with those presented here will show that the changes are of relatively slight importance in the weekly seasonal indexes and the general trend of the seasonal curves are not, of course, affected in the least, this being dependent upon the actual number of infant deaths as reported by telegraph weekly to the Census Bureau.

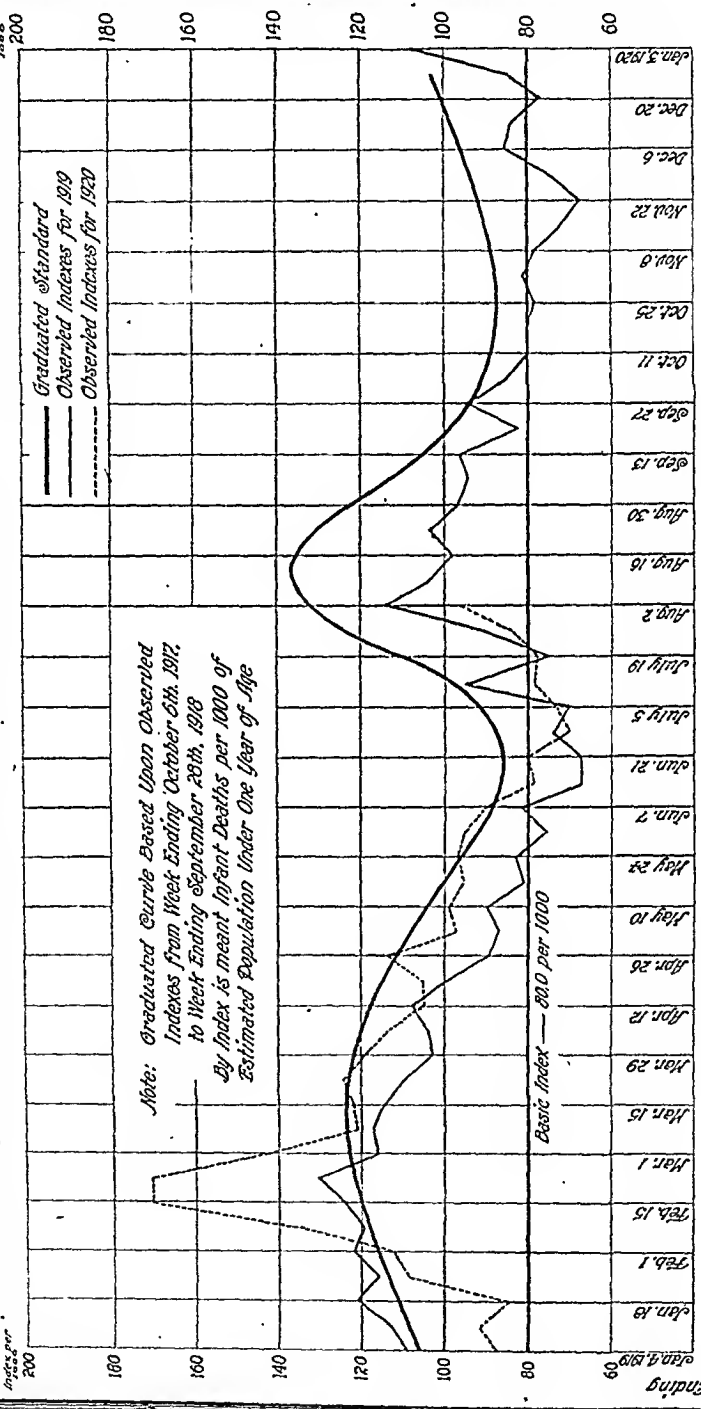
TABLE I

Comparative Infant Mortality of 16 Large American Cities Year Ending September 28, 1918			
Cities	Estimated Population Under 1 Year	Reported Deaths Under 1 Year	Index or Deaths per 1,000 Est. Pop. Under 1 Year
North Atlantic:			
Albany.....	1,655	224	132.7
Boston.....	14,823	2,011	135.7
Buffalo.....	10,365	1,517	149.3
Cambridge.....	2,405	251	101.4
Fall River.....	3,318	625	188.4
Jersey City.....	6,789	814	119.9
Lowell.....	2,435	453	195.1
Newark, N. J.....	9,856	1,067	108.3
New Haven.....	3,527	411	116.5
New York.....	126,362	11,593	91.7
Philadelphia.....	37,516	4,748	126.5
Pittsburgh.....	13,601	1,915	140.8
Providence.....	5,428	667	122.9
Rochester.....	5,182	563	108.6
Syracuse.....	3,013	451	149.2
Worcester.....	3,782	432	114.2
Total.....	250,150	27,805	111.2

*The term "index" will be used throughout this paper to express the infant mortality per 1000 of estimated population under one year of age. Infant mortality rate has come to mean infant deaths per 1000 births, the deaths and births being for the same period—week, month or year, as the case may be. For comparative purposes the "index" as here determined is probably as accurate, if not more so, than the "rate" as births are nowhere so completely reported as deaths and the variation in the completeness of birth reporting is considerable, even in the large American cities.

Infant Mortality — North Atlantic Cities

Comparison of Observed 1919 Infant Mortality Indexes with Graduated Standard



Observed Indexes are Based Upon Weekly Returns of Infant Deaths as Published by the Division of Vital Statistics of the U.S. Census Bureau.

Source: U.S. Department, The Prudential Insurance Company of America

Chart No. 1.

Central Atlantic:			
Atlanta.....	4,148	380	91.6
Baltimore.....	12,812	2,036	158.9
Richmond.....	3,241	476	146.7
Washington.....	6,903	814	122.3
Total.....	27,107	3,736	137.8
Southern:			
Birmingham.....	3,747	431	115.0
Louisville.....	3,002	432	110.7
Memphis.....	2,660	298	112.0
Nashville.....	2,263	267	118.0
New Orleans.....	7,630	888	116.4
Total.....	20,202	2,316	114.6
Middle Western:			
Chicago.....	58,343	6,093	101.4
Cincinnati.....	6,626	735	110.9
Cleveland.....	18,469	1,800	97.5
Columbus.....	3,520	410	116.5
Dayton.....	2,781	251	90.3
Grand Rapids.....	2,815	217	77.1
Indianapolis.....	4,908	536	109.2
Kansas City, Mo.....	4,618	514	110.6
Milwaukee.....	9,373	1,077	114.9
Minneapolis.....	6,577	591	90.3
Omaha.....	3,001	251	83.6
St. Louis.....	13,685	1,265	92.4
St. Paul.....	3,990	365	91.5
Toledo.....	4,475	484	108.2
Total.....	143,214	14,592	101.9
Western:			
Denver.....	4,001	397	99.2
Los Angeles.....	7,880	577	73.2
Oakland.....	3,611	214	59.3
Portland.....	3,691	328	88.8
San Francisco.....	7,233	475	65.7
Seattle.....	4,384	299	68.2
Spokane.....	2,048	136	66.4
Total.....	32,851	2,426	73.8

In Table I are presented the comparative infant mortality indexes (infant deaths per 1,000 estimated population under one year of age) for the year ending September 28, 1918, and on the basis of the Census populations of 1910 and 1920. The proportion of the total population of ages under one year is assumed to have been the same as in the Census of 1910, as the 1920 populations with distinction of age are not yet available. According to this summary the lowest index was for Oakland, Calif. (59.3) and the highest index was for Lowell, Mass. (198.4). Other relatively low infant mortality indexes in the normal year ending September 28, 1918, were 65.7 for San Francisco, Calif., 66.4 for Spokane, Wash., 68.2 for Seattle, Wash., and 73.2 for Los Angeles, Calif. In the cities of the Middle Western group Grand Rapids, Mich., had an index of 77.1 and Omaha, Neb., the relatively low index of 83.6. New York City had the lowest infant mortality index (91.7) of

any city in the North Atlantic group; and Atlanta, Ga., had the lowest index (91.6) of any city in the Central Atlantic group. In the Western group no one of the seven cities had an infant mortality index as here calculated as high as 100.0, while in contrast not one of the five cities of the Southern group had an index as low as 110.0, the average being 114.6, with no wide departures from that average in any city of the group. In the North Atlantic group Fall River, Mass., like Lowell, had a very high index (188.4), while Buffalo and Syracuse, N. Y., also had relatively high indexes of 149.3 and 149.2, respectively. In the Central Atlantic group of four cities the highest index was for Baltimore, Md., or 158.9, but Richmond, Va., also had a relatively high index for this group, or 146.7. Table I should be a valuable standard or norm by which to measure the subsequent improvement, or otherwise, in the infant mortality of the various cities, 46 in number, embraced therein.

TABLE II

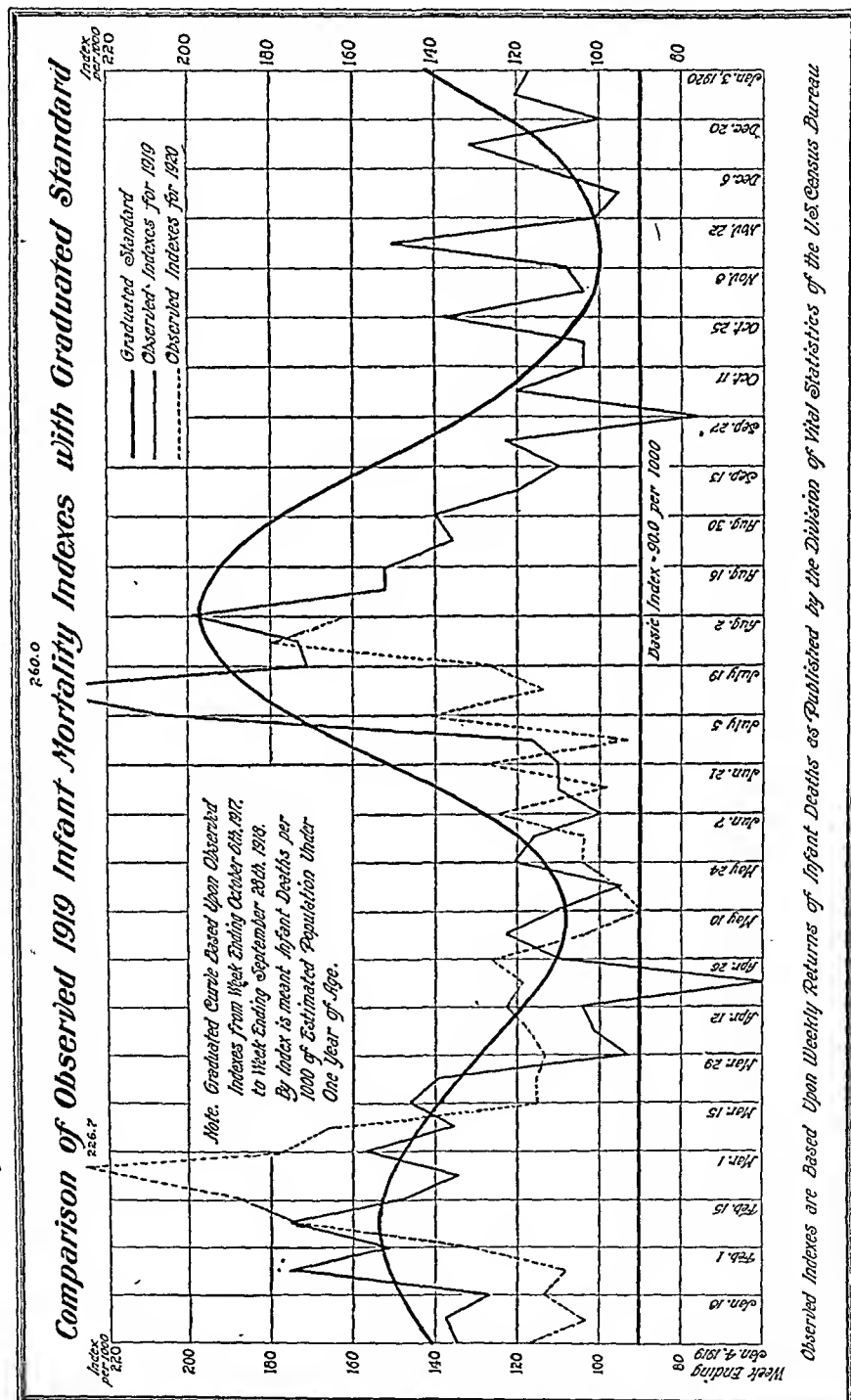
Comparative Infant Mortality of 46 Large American Cities
Year Ending December 27, 1919

Cities	Estimated Population Under 1 Year	Reported Deaths Under 1 Year	Index or Deaths per 1,000 Est. Pop. Under 1 Year
North Atlantic:			
Albany.....	1,718	174	101.3
Boston.....	15,057	1,813	120.4
Buffalo.....	10,626	1,398	131.6
Cambridge.....	2,420	200	82.6
Fall River.....	3,322	417	125.5
Jersey City*.....	6,894	647	101.6
Lowell.....	2,455	385	156.5
Newark.....	10,107	867	85.8
New Haven.....	3,625	301	83.0
New York.....	129,842	10,630	82.2
Philadelphia.....	38,419	3,769	98.1
Pittsburgh.....	13,793	1,630	118.2
Providence.....	5,553	514	92.6
Rochester.....	5,397	470	87.1
Syracuse.....	3,138	358	114.1
Worcester**.....	3,891	360	94.3
Total.....	255,757	23,933	93.8
Central Atlantic:			
Atlanta.....	4,297	350	83.5
Baltimore.....	13,293	1,715	129.0
Richmond.....	3,319	410	122.4
Washington.....	7,167	702	97.9
Total.....	28,106	3,186	113.4

*Data available for only 48 weeks.

**Data available for only 51 weeks.

Infant Mortality — Central Atlantic Cities



Observed Indexes are Based Upon Weekly Returns of Infant Deaths as Published by the Division of Vital Statistics of the U.S. Census Bureau

Sullivan's Department, The Prudential Insurance Company of America

Chart No. 2.

Southern:			
Birmingham.....	3,600	391	100.3
Louisville.....	3,920	389	99.0
Memphis.....	2,740	355	130.7
Nashville.....	2,287	272	118.9
New Orleans.....	7,776	715	91.0
Total.....	20,632	2,125	103.0
Middle Western:			
Chicago.....	60,080	5,746	95.6
Cincinnati.....	6,720	615	91.5
Cleveland.....	19,312	1,513	78.2
Columbus.....	3,619	385	105.6
Dayton.....	2,886	279	90.7
Grand Rapids.....	2,896	237	81.8
Indianapolis.....	3,106	318	101.4
Kansas City, Mo.....	4,800	523	109.0
Milwaukee.....	9,688	1,010	101.8
Minneapolis.....	6,790	520	76.6
Omaha.....	3,175	298	93.0
St. Louis.....	13,917	949	68.2
St. Paul.....	4,117	283	68.7
Toledo.....	4,694	410	93.7
Total.....	117,810	13,316	90.1
Western:			
Denver.....	4,105	357	87.0
Los Angeles.....	8,437	605	71.5
Oakland.....	3,787	211	55.7
Portland.....	3,808	325	85.3
San Francisco.....	7,435	502	67.5
Seattle.....	1,555	306	67.2
Spokane.....	2,017	120	58.6
Total.....	34,191	2,426	70.9

In Table II an effort has been made to calculate the infant mortality indexes of the same 46 cities for the year ending December 27, 1919. The striking feature in the comparison of Table II with Table I (both for 52 weeks, or a full year) is the almost uniformly lower indexes disclosed in Table II. This is brought out clearly in the following summary, Table III, limited to a comparison of five geographical groups of cities:

TABLE III

Comparative Infant Mortality of Five Geographical Groups of 46 Cities

(Indexes or Deaths per 1,000 Estimated Population Under One Year)

Group	(1) Year Ending Sept. 28, 1918	(2) Year Ending Dec. 27, 1919	Decrease	
			Actual	Per- centage
North Atlantic.....	111.2	93.8	17.4	15.6
Central Atlantic.....	137.8	113.4	24.4	17.7
Southern.....	114.6	103.0	11.6	10.1
Middle Western.....	101.9	90.1	11.8	11.6
Western.....	73.8	70.9	2.9	3.9

How much of this favorable showing for 1919 was due to the splendid organization work of the Federal Children's Bureau initiated in 1918 in co-operation with the Council of National Defense it is impossible to say, but it must have been in part responsible for these favorable results. The comparatively low 1919 indexes may in part have been due

also to the influenza epidemic in the last four months of 1918, which affected the infant mortality adversely and intensively for short periods during the last three months of 1918, and only to a much lesser degree in the early months of 1919, with the exception of the group of Western cities. These facts will be discussed in more detail subsequently, and chart No. 5 visualizes the effects of the 1918-1919 influenza epidemic on infant mortality. The recurrent epidemic of 1920 also had an unfavorable effect on the infant mortality, but for shorter durations than in 1918-1919. See Charts 1, 2, 3 and 4.

In Table IV are summarized the infant mortality indexes (yearly basis) for the first 31 weeks of 1920. On the basis of the facts presented comparisons of the 1920 mortality with the normal year, 1917-1918, can readily be made for the individual cities as well as for the geographical groups. All of these group indexes are lower for the first seven months of 1920 than for the normal or standard year ended September 28, 1918, with the exception of that including the Western cities, which was 89.4 in 1920, against 73.8 for the year 1917-1918.

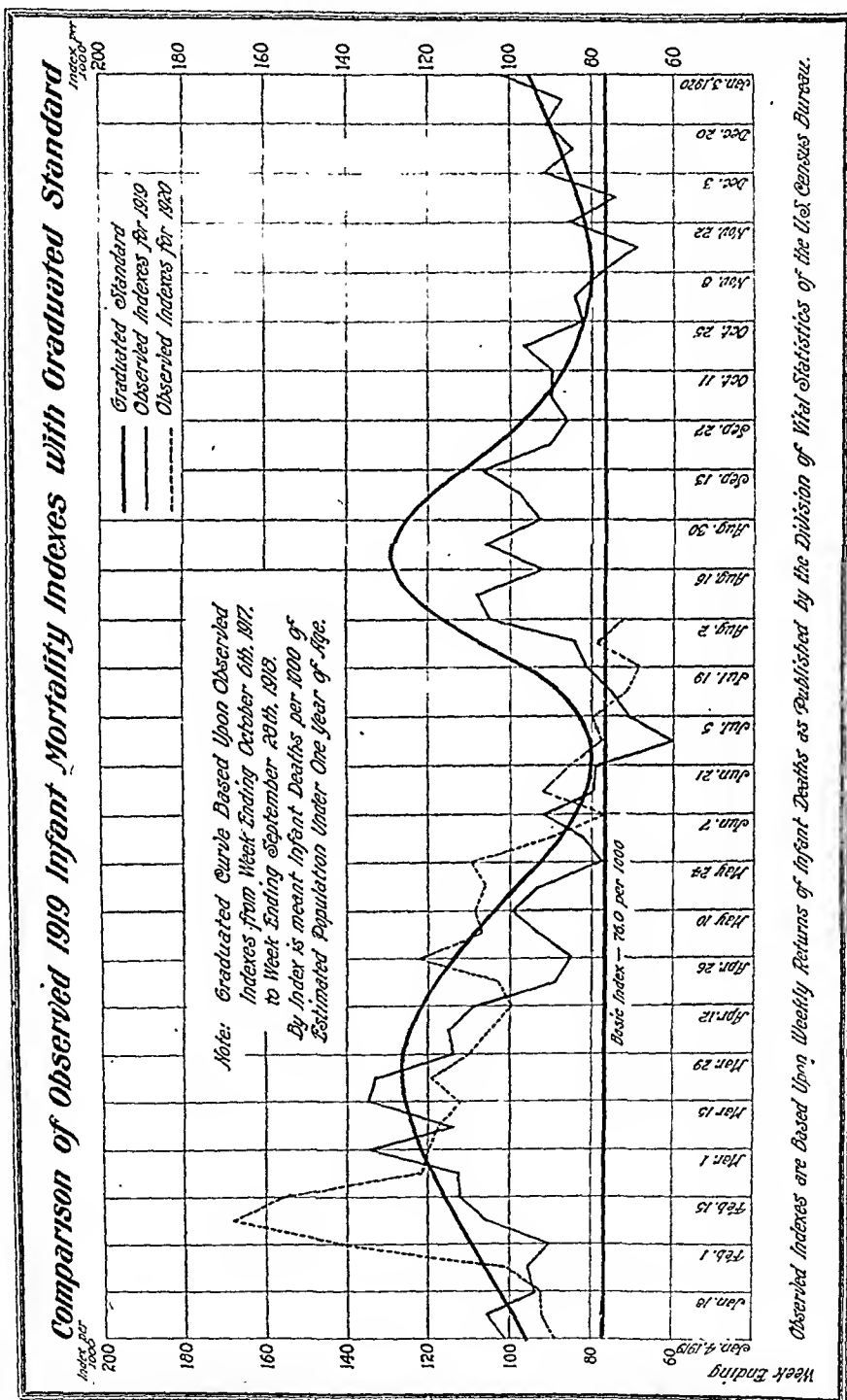
TABLE IV

Comparative Infant Mortality of 46 Large American Cities for 31 Weeks Ending July 31, 1920

Cities	Estimated Population Under 1 Year	Reported Deaths Under 1 Year	Index or Deaths per 1,000 Est. Pop. Under 1 Year
North Atlantic:			
Albany.....	1,728	109	105.9
Boston.....	15,135	1,224	135.7
Buffalo.....	10,713	810	128.2
Cambridge.....	2,425	155	107.3
Fall River.....	3,324	250	126.2
Jersey City.....	6,220	449	124.9
Lowell.....	2,461	239	163.0
Newark.....	10,190	636	104.7
New Haven.....	3,657	232	106.4
New York.....	130,332	7,293	93.9
Philadelphia.....	38,710	2,344	101.6
Pittsburgh.....	13,857	1,003	121.6
Providence.....	5,594	341	103.1
Rochester.....	5,468	355	108.9
Syracuse.....	3,169	231	125.0
Worcester.....	3,028	253	108.1
Total.....	256,920	15,911	104.2
Central Atlantic:			
Atlanta.....	1,346	291	113.4
Baltimore.....	13,451	1,138	141.9
Richmond.....	3,384	270	133.8
Washington.....	7,255	496	114.7
Total.....	28,436	2,198	120.6

*Data limited to 30 weeks

Infant Mortality — Middle West Cities



Statistical Department, The Prudential Insurance Company of America

Southern:			
Birmingham.....	3,940	322	136.8
Louisville.....	3,938	191	81.4
Memphis*.....	2,166	242	151.6
Nashville.....	2,294	187	136.8
New Orleans.....	7,821	505	108.2

Total..... 20,771 1,417 117.4

*Data limited to 30 weeks.

Middle Western:			
Chicago.....	60,659	3,672	101.5
Cincinnati.....	6,752	408	101.4
Cleveland.....	19,633	937	80.1
Columbus.....	3,692	231	105.0
Dayton.....	2,921	177	101.6
Grand Rapids.....	2,983	188	105.7
Indianapolis.....	5,172	374	121.3
Kansas City, Mo.....	4,850	422	146.0
Milwaukee.....	9,227	631	108.8
Minneapolis.....	6,861	371	90.7
Omaha.....	3,232	262	136.0
St. Louis.....	13,995	702	81.2
St. Paul.....	4,160	200	80.6
Toledo.....	4,767	294	103.4
Total.....	149,414	8,869	99.6

Western:			
Denver.....	4,139	274	111.0
Los Angeles.....	8,650	528	102.4
Oakland.....	3,815	170	78.1
Portland.....	3,846	184	80.2
San Francisco.....	7,503	339	75.8
Seattle.....	4,612	240	87.3
Spokane.....	2,017	108	88.5
Total.....	34,642	1,850	89.4

The effect on infant mortality of the 1918-1919 influenza epidemic was interesting. The indexes and the weekly curves seem to indicate quite clearly that in a large part the effect was indirect, that is, that the excess infant mortality was due largely to lack of care and that infant attack by the disease was not wholly responsible. In most cities the highest infant mortality indexes occurred when the epidemic was at its height in the given city or group of cities, but these high indexes dropped more quickly to normal than the adult death rates. Lack of mother's care, scarcity of nurses and physicians, and possibly other social and economic maladjustments probably brought about a considerable portion of the excess infant mortality during the influenza epidemic.

Table V presents the facts roughly indicative of the excess in the infant mortality during the influenza period, 1918-1919, but Table VI brings out the details week by week for the four groups of cities for which reliable data are available. This table, supplemented by Chart No. 5, gives a very complete picture of the effect of the influenza wave on

TABLE V

Comparative Infant Mortality of 40 Large American Cities
For 22 Weeks Ending March 1, 1919

Cities	Estimated Population Under 1 Year	Reported Deaths Under 1 Year	Index or Deaths per 1,000 Est. Pop. Under 1 Year
North Atlantic:			
Albany.....	1,708	93	128.1
Boston.....	14,979	1,062	167.6
Buffalo.....	10,539	789	174.7
Cambridge.....	2,415	127	121.4
Fall River.....	3,321	225	160.0
Jersey City*.....	6,859	217	156.0
Lowell.....	2,448	228	220.1
Newark.....	10,023	507	119.6
New Haven.....	3,592	187	123.0
New York.....	128,352	5,883	108.3
Philadelphia.....	38,128	2,427	159.5
Pittsburgh.....	13,720	1,008	173.6
Providence.....	5,511	311	147.5
Rochester.....	5,325	273	121.2
Syracuse.....	3,106	218	160.0
Worcester**.....	3,855	133	99.7
Total.....	253,890	13,742	129.9
Central Atlantic:			
Atlanta.....	4,247	191	109.3
Baltimore.....	13,133	931	167.6
Richmond***.....	3,311	220	157.0
Washington.....	7,079	376	125.6
Total.....	27,773	1,718	146.2
Southern:			
Birmingham****.....	3,848	193	124.2
Louisville.....	3,020	219	132.1
Memphis***.....	2,713	98	84.0
Nashville.....	2,279	131	139.0
New Orleans.....	7,727	400	122.4
Total.....	20,457	1,011	123.0
Middle Western:			
Chicago.....	59,501	2,916	117.0
Cincinnati.....	6,639	342	120.9
Cleveland.....	19,031	648	80.4
Columbus.....	3,606	156	102.2
Dayton.....	2,851	137	113.6
Grand Rapids.....	2,869	110	90.6
Indianapolis.....	5,010	238	111.9
Kansas City, Mo.....	4,749	213	106.0
Milwaukee.....	9,550	507	125.5
Minneapolis.....	6,719	250	88.0
Omaha****.....	3,118	174	138.1
St. Louis.....	13,810	510	87.1
St. Paul.....	4,075	150	87.0
Toledo.....	4,621	223	114.1
Total.....	146,279	6,601	106.8
Western:			
Denver.....	4,070	144	83.6
Los Angeles.....	8,265	360	103.0
Oakland.....	3,728	130	82.4
Portland.....	3,770	169	106.0
San Francisco.....	7,368	310	99.5
Seattle.....	4,498	183	96.2
Spokane.....	2,017	83	93.7
Total.....	33,746	1,379	96.6

*Data available for only 12 weeks.

**Data available for only 18 weeks.

***Data available for only 20 weeks.

****Data available for only 21 weeks.

infant mortality. In the North Atlantic cities the excess infant mortality was largest, followed by the Central Atlantic group. The Western group of cities came third, but there the unfavorable effect was longer drawn out than elsewhere, the cities in that group being so

Infant Mortality — Western Cities

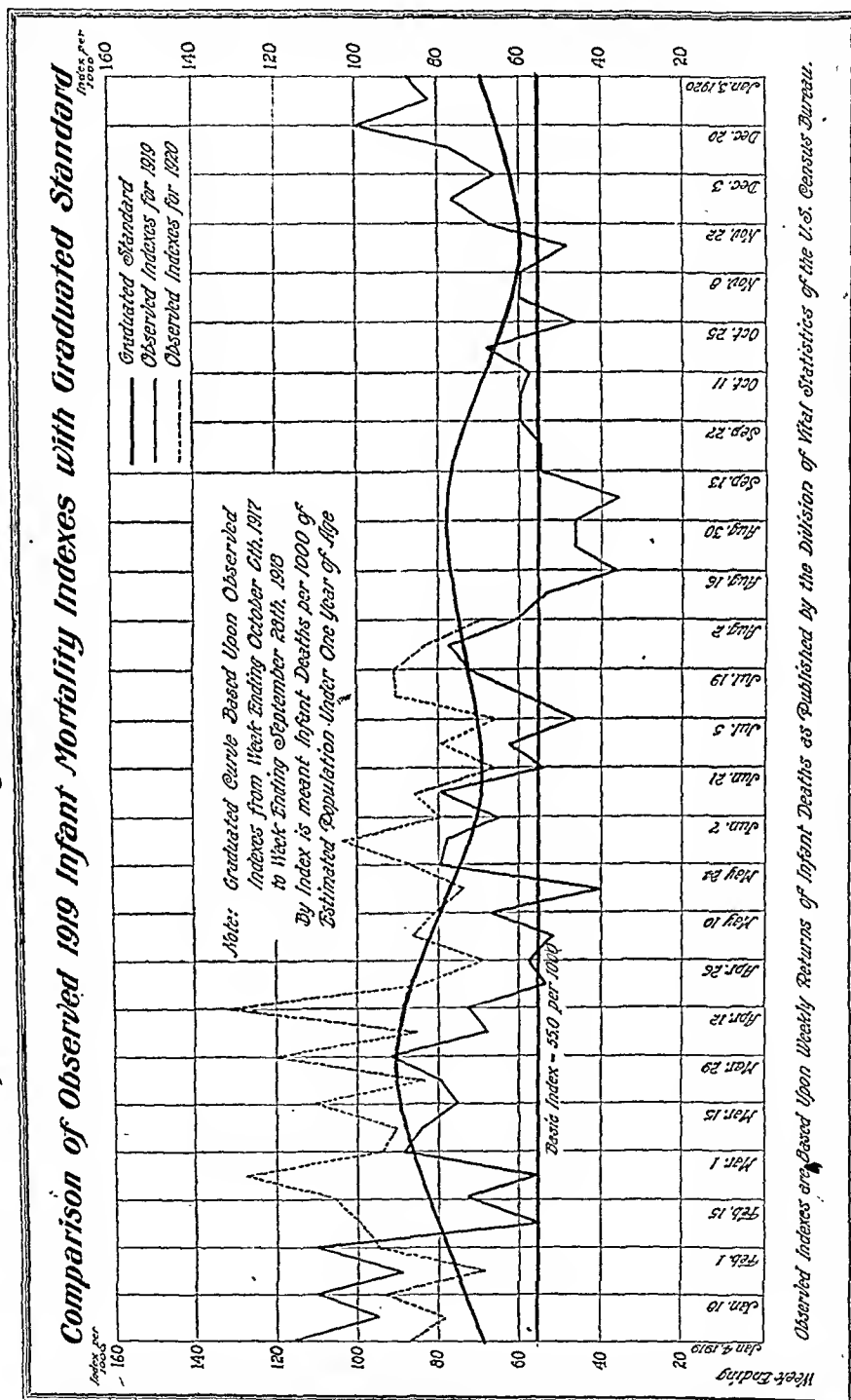


Chart No. 4.

far apart, apparently the epidemic wave traveled slower in that section.

The most valuable part of this paper, in my judgment, are the five charts showing the weekly fluctuations in the infant mortality indexes for four geographical groups of cities. Unfortunately, the Southern cities could not be successfully charted because of irregularities, due probably to the fact that the

TABLE VI

Comparative Infant Mortality

Influenza Epidemic Period 1918-1919, Compared with 1917 Infant Deaths per 1,000 Estimated Population Under One Year of Age, Reduced to Yearly Basis

North Atlantic Cities

1917 (Standard)		1918		Percent Increase 1918 over 1917
Week Ending	Index	Week Ending	Index	
Sept. 22.....	97.8	Sept. 21.....	110.3	12.8
" 29.....	93.5	" 28.....	113.3	21.2
Oct. 6.....	90.6	Oct. 5.....	127.8	41.1
" 13.....	88.2	" 12.....	159.1	80.4
" 20.....	87.2	" 19.....	200.0	130.1
" 27.....	86.8	" 26.....	246.3	183.8
Nov. 3.....	87.1	Nov. 2.....	205.6	135.9
" 10.....	85.0	" 9.....	141.5	60.8
" 17.....	89.3	" 16.....	103.9	21.0
" 24.....	91.2	" 23.....	99.3	8.9
Dec. 1.....	93.3	" 30.....	93.7	0.4
Sept. 22-Dec. 1.....	90.3	Sept. 21-Nov. 30.....	146.1	61.8

TABLE VII

Central Atlantic Cities

1917 (Standard)		1918		Percent Increase 1918 over 1917
Week Ending	Index	Week Ending	Index	
Sept. 22.....	160.9	Sept. 21.....	129.0	-19.8
" 30.....	149.5	" 28.....	145.9	-2.1
Oct. 6.....	138.9	Oct. 5.....	161.9	18.7
" 13.....	129.5	" 12.....	245.2	89.3
" 20.....	121.5	" 19.....	372.1	206.2
" 27.....	115.1	" 26.....	350.5	230.6
Nov. 3.....	111.1	Nov. 2.....	205.1	84.6
" 10.....	109.1	" 9.....	135.3	24.0
" 17.....	108.9	" 16.....	122.6	12.6
" 24.....	110.8	" 23.....	129.0	16.4
Dec. 1.....	114.5	" 30.....	80.3	-29.9
Sept. 22-Dec. 1.....	121.5	Sept. 21-Nov. 30.....	191.8	53.3

TABLE VIII

Middle Western Cities

1917 (Standard)		1918		Percent Increase 1918 over 1917
Week Ending	Index	Week Ending	Index	
Sept. 22.....	103.4	Sept. 21.....	112.2	8.5
" 29.....	94.4	" 28.....	107.9	11.9
Oct. 6.....	90.8	Oct. 5.....	107.9	18.8
" 13.....	86.7	" 12.....	117.1	35.1
" 20.....	83.8	" 19.....	100.9	20.4
" 27.....	81.8	" 26.....	174.4	113.2
Nov. 3.....	80.7	Nov. 2.....	148.2	83.6
" 10.....	80.2	" 9.....	124.2	54.9
" 17.....	80.4	" 16.....	101.3	26.0
" 24.....	81.4	" 23.....	89.8	10.3
Dec. 1.....	82.7	" 30.....	93.9	13.5
Sept. 22-Dec. 1.....	86.2	Sept. 21-Nov. 30.....	116.2	34.8

TABLE IX

Western Cities

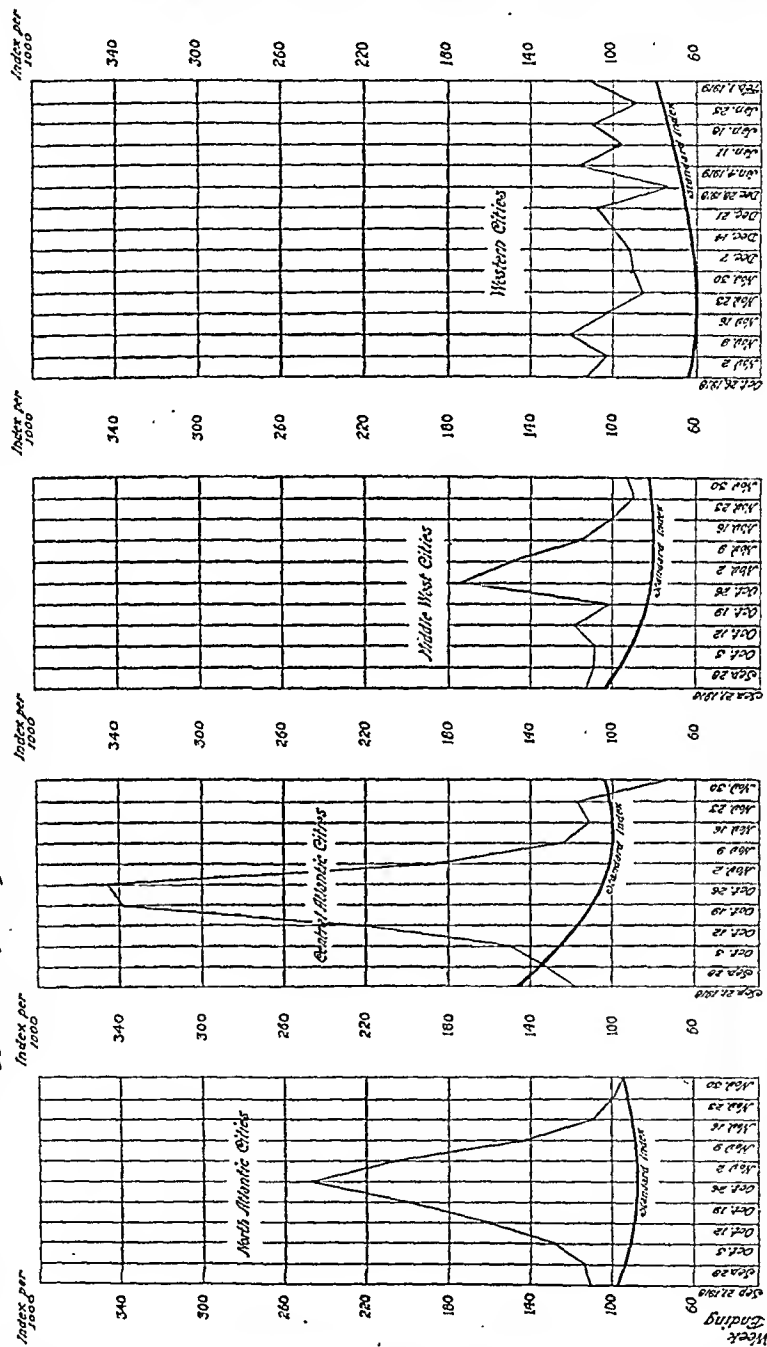
1917 (Standard)		1918		Percent Increase 1918 over 1917
Week Ending	Index	Week Ending	Index	
Oct. 20.....	65.3	Oct. 19.....	67.8	3.8
" 27.....	62.9	" 26.....	112.6	79.0
Nov. 3.....	61.1	Nov. 2.....	102.5	67.8
" 10.....	60.0	" 9.....	119.8	99.7
" 17.....	59.1	" 16.....	102.5	72.5
" 24.....	59.5	" 23.....	85.1	43.0
Dec. 1.....	60.2	" 30.....	89.5	48.7
" 8.....	61.6	Dec. 7.....	92.4	50.0
" 15.....	63.1	" 14.....	99.6	57.8
" 22.....	61.9	" 21.....	108.2	66.7
" 29.....	60.8	" 28.....	73.6	10.2
Jan. 5.....	68.0	Jan. 4.....	115.1	67.5
" 12.....	71.1	" 11.....	95.2	33.9
" 19.....	73.1	" 18.....	109.7	49.5
" 26.....	75.6	" 25.....	85.0	16.1
Feb. 2.....	77.0	Feb. 1.....	109.7	40.8
		Oct. 10, 1918, to		
Oct. 26-Feb. 2... 65.7		Feb. 1, 1919... 95.2		49.5

white and colored infant deaths are not separately reported to the Census Bureau in the data here analyzed. The relatively high indexes and wide seasonal variations in the Central Atlantic group, may also be attributed in part to the large Negro element in the population of that group.

In the preparation of the data for charting and in the construction of the charts I am deeply indebted to Mr. Arne Fisher, who is almost solely responsible for that part, the most important, I think, of this paper. These charts are based upon the fact that infant mortality indexes by weekly intervals exhibit a cyclic periodicity. If the data here subjected to mathematical treatment (1917-1918 graduated curves) were available also with distinction of cause, it undoubtedly would be entirely feasible to plot the curves which would be typical of the geographical areas and of the seasons. Causes of mortality inherent in congenital debility would exhibit a very different series of curves than the respiratory and digestive causes. The last two groups are undoubtedly more affected by season. Even a casual study and comparison of these five charts will reveal the wide variations in infant mortality, due in large part to locality and season.

Infant Mortality Statistics

Effect of Influenza Epidemic — 1918-1919



Source: U.S. Department of Health, The Influenza Epidemic in America

Chart No. 5.

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

Publication Office: 124 W. Polk Street, Chicago, Ill.

EDITORIAL OFFICE: 169 MASSACHUSETTS AVE., BOSTON, MASS.

A. W. HEDRICH, C. P. H., Editor

J. RITCHIE, Jr., Associate Editor

Editorial Assistants

E. R. HAYHURST, M.D.

P. M. HOLMES, M.D.

FRANCIS H. SLACK, M.D.

DAVID GREENBERG

JAMES A. TOBEY

JAMES M. STRANG

M. P. HORWOOD, M.S.

HOMER N. CALVERT

Board of Advisory Editors

PETER H. BRYCE, M.D., Ottawa, Canada

PROF. M. J. ROSENAU, Boston, Mass.

CHARLES V. CHAPIN, M.D., Providence, R. I.

PROF. W. T. SEDGWICK, Cambridge, Mass.

EUGENE R. KELLEY, M.D., Boston, Mass.

PROF. GEORGE C. WHIFFLE, Cambridge, Mass.

W. A. EVANS, M.D., Chicago, Ill.

PROF. S. M. GUNN, Paris, France.

All expressions of opinion and all statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

NOTICE TO SUBSCRIBERS: Subscription Price, payable in advance, \$4.00 per year for United States and possessions; \$4.50 for Canada and other foreign countries. Single copies, 50 cents postpaid. Membership in the American Public Health Association, including subscription to Journal, \$5.00 per year. In Change of Address please give both old and new address, and mail before the tenth of the month to take effect with the current issue. Mailing Date, 5th of each month. Advertisements accepted only when commendable, and worth while both to reader and advertiser. News Items, interesting clippings and illustrations are gladly received, together with name of sender. Copyright, 1919, by A. W. Hedrich.

HEELS AND TOES

One may well look at the feet of our women on the street and ask, "Are we in civilized America in the twentieth century or is it mediæval China with women's feet constricted and distorted?" The heels and the toes that fashionable shoes present should set the sanitarian to thinking.

It is not in America alone or merely now that these problems present themselves. At the beginning of the war, before this country became interested to the extent of taking a part in it, Dr. A. Ritschl, a German, voiced in the periodical literature of the day the following sentiments of disapproval: "But how badly the feet are treated by a majority of our people, partly from ignorance, partly through foolish vanity, by shoes too short or too narrow, with heels too high. What misshapen and deforming shoes they dare offer our women and girls even in this grave time of war, when it is the duty of every one to make himself strong and efficient." He further comments on conditions as they then existed by saying, "A glance at the people moving in a city street shows that crowds of these have bitten at the injurious bait." Dr. Ritschl goes on to discuss the high-heeled, narrow shoe from the anatomical and medical points of view. He also comments on the heel that is too low.

The condition that set this German physician to thinking is the rule, almost, in this country. The streets of all our cities witness great crowds of women and girls shod in injurious foot gear. It is not that men have not injurious and insanitary fashions, but at the moment it is the high heel and pointed, wedge shaped toe, that are under discussion. High heels on the street furnish another example of what has been termed "the American failing of diamonds at breakfast," and while they may be demanded for a short while as a portion of party adornments, they are obviously out of place on the street. But they are there and furthermore are worn by women in occupations requiring continuous standing, by shop girls, restaurant waitresses, elevator attendants and factory employees.

It is important in this connection to realize that more and more it is known and taught that the human body is a connected whole, and local causes for what appear to be local ailments are less and less sought. "What affects one part of the body affects the whole" is an expression of the thought of today.

America is essentially a mechanical nation and the false mechanics of the high heel should appeal to every thinking individual. The principles of the arch apply equally well whether the structure be of stone and mortar or bone and muscle. The main arch of the foot supports great weight, the entire weight of the body, and it is important that the stresses be properly provided for and that the arch have a firm foundation. The high heel really violates both these principles; it shifts the strains and changes the foundation to an insecure one. Watch a French heel strike the sidewalk. See how uncertain it is when it comes into contact with the walk, see how it "wobbles" before coming to rest, and see how, even then, the lines of support are not the vertical ones of natural posture.

The tilted arch means undue strain somewhere, the indecision of the step means strain somewhere, and the final posture of rest means still other strains brought to bear on muscles not intended for the work. The high heel means disarrangement of the regular lines of support of the body above the foot. Every engineer knows that compensations are necessary. When the elevated heel throws the knee forward to maintain a comfortable angle at the ankle, it is balanced by a backward-tilted thigh and this again demands a forward-leaning backbone and body. Instead of the upright figure that is normal for the support of the weight, this is upheld by a line broken at three points, a mechanical disadvantage. Be these departures from natural conditions ever so small, they mean unfortunate leverages and the calling into play of muscles not intended for the work.

The toboggan slide of the sole upheld at one end by the high heel needs no discussion for those conversant with mechanics. It is inevitable that the foot, impelled by the weight of the body, slide down the inclined plane of the sole till restrained by the toe-end or the sides of the shoe. If deliberate intention had sought to create continuous inconvenience and final injury to the foot, it could hardly have hit upon a more cunning device for the purpose. It is no use to urge the well-known plea, "They are perfectly comfortable and miles too wide," for the mechanical conditions are there and injury will inevitably follow. Then of course there are important medical conditions in distortion and constriction to be considered, in which the foot is not the only sufferer.

It is a well-known military maxim that an army is as good as its feet and one especial care in the late war was to have the American soldier well fitted to shoes. Some original invention made this possible in a minimum of time. For the first time in the country the scientific measurement of the feet was undertaken for very large companies of men, and from these measurements it developed that half to three-quarters of the men of the country were wearing shoes from half a size to two sizes too small. This difficulty, so far as the army is concerned, was corrected in the interests of efficiency. The reports prove, however, that the men of the United States have not given the attention to their feet that good health and efficiency demand.

The person, man or woman, whose ability to walk is for any reason handicapped runs the risk of falling into a vicious circle. He loses the amount of exercise requisite for good health, and ill health tends continually to lessen the already insufficient measure of exercise.

There is much more in the proper shoeing of a nation than appears at first sight. In an enlightened age the feet are truly worthy of sane and proper treatment. Care of the feet demands today in good measure the attention of popular educators in public health.

QUARANTINE OF THE CRETIC

The Cretic incident in the port of Boston involves important principles of public health. It would appear that the steamship arrived in Boston without technically perfect health papers from the port of sailing. The crew of the steamship objected, it is said, to the practices and requirements of the quarantine officers. If the public press is to be credited, there was talk of withdrawing the steamer from the port in future sailings. This, however, has not been done. The matter of the stringency of the quarantine administration was discussed by the Boston Chamber of Commerce and it is said that a telegram of complaint was sent by it to Washington. The situation, whatever it may have been in reality, displays the need of information to various parties of what quarantine really means.

The story of the quarantine service in Boston is not without interest. Developed as a local enterprise, carried on for a good many years under the supervision of Boston's health department, it had the reputation of being second to none in the country in quality of administration. One by one the ports on the Atlantic and Gulf states came under Government quarantine supervision, with Boston and New York alone outstanding. Six or seven years ago in the interests of complete standardization of quarantine regulations, Boston made over its quarantine of the National Government, and it was presumed that the management in New York would be likewise standardized.

The bubonic plague and other Oriental infections are knocking at our doors. The tremendous movement of men from all quarters of the earth has focussed in middle Europe maladies heretofore endemic in Asia or Eastern Russia. Infectious diseases are nearer this country than ever before. The plague has made its appearance in a number of our Southern ports, and other undesirable diseases are known to be running in European cities of the Mediterranean and Baltic. Never before in the world has this country been called upon to exert so close a watch over its immigrants and incoming shipping as now.

It is not a new story for business to interest itself in quarantine. California has had an experience of the kind that should be a lesson to every other section of the country. It is a matter of history that commercial interests refused to acknowledge the existence of the plague on the West Coast until it had gained such a foothold that the results are with us yet. It is important that a similar mistake be not made elsewhere. The health of the people is of more consequence than the business of the few, and it is unfortunate that proper official acts should find criticism through the press.

The Boston Transcript, editorially, speaks of the relationships between business bodies and Governmental quarantine functions in these words, showing a firm stand on good and true health principles: "If the health officer of the port of Boston has been enforcing the laws passed by Congress for the protection of the public health with diligence and intelligence, he has been doing his duty as an officer of the Government. . . . In the discharge of that duty he deserves the whole-hearted support of the people of Boston, and the nation to which Boston is one of the chief gateways. . . . On this account it is to be hoped that the Surgeon General of the Public Health Service will not jump to the conclusion that the Boston Chamber of Commerce speaks for all the people of Boston in its telegram of complaint against alleged quarantine discrimination at this port. If Dr. Bryan, the representative here of Surgeon General Creel, has been derelict in duty, why did not the Chamber of Commerce so report? If he has not been derelict why does the Chamber of Commerce, instead of supporting him, appeal for an investigation of his office? What are the facts in the case? They should be published before the name of Boston is used in a way to weaken his authority."

It is most important that official business bodies and representatives of the press view the question of quarantine as a uniformly acting Government Service designed for the protection of the health of the nation.

BOOKS AND REPORTS REVIEWED

A National Plan for Health Service.
*Report of the [English] Consultative Council
on Medical and Allied Services.*

No country or great body of people has laid out or adopted for itself any well thought out or comprehensive scheme of universal service in curative and preventive medicine. This, in spite of the fact that there have been made in many countries broad and general applications of scientific knowledge in the industrial, agricultural and economic fields. The field of health is as yet, however, largely untilled and this condition exists in face of the tremendous strides that have been made in the last few decades by medical and sanitary science. Medical men and public health workers everywhere are beginning to realize that the day is past for a haphazard application of scientific principles to cure the ills of the race. Progressive men and women in our field are thinking about and looking forward to the time when for this country and perhaps for the world there will be put into operation an intelligent and all-including plan that may logically attack the problems of disease prevention and cure, infant welfare and depleted vitality.

It has fallen to England to take the first step in this direction. This country now has a plan for a systematized health and medical service established on a basis of locality but applicable area for area to the whole kingdom. The plan is given in the interim report of the Consultative Council on Medical and Allied Services, to the British Ministry of Health. The *Lancet* for May 20th and the *Medical Officer* of the same date outline and quote extensively this report. The document first prepares the reader for a complete pattern of organization designed to meet the needs of any community and notes the facts that have created this need. Medical services are classified into (1) those which are domiciliary as distinct from those which are institutional and (2) those which concern the section of the population and not the sick individuals. The periphery of the proposed scheme is constituted by the preven-

tive and curative services which revolve around the home, such as those of the doctor, dentist, nurse, druggist or midwife. Various other "communal" services, preventive and curative are brought together to form one organization in an institution called a health center. The domiciliary services of a given district are based on a local health center. Patients retain their own doctors but have in addition the advantage of an institution conducted by the general practitioners of the district in conjunction with an efficient nursing service and the aid of visiting consultants and specialists.

Just as a group of homes is based on a local health center, so a group of these centers is based on a primary health center. Here is extensive equipment and specialized personnel. A third institutional element enters into the scheme, namely a teaching hospital having a medical school. The hospital would receive cases of unusual difficulty and in addition the special departments and laboratories of the hospital would be courts of reference and would lead and inspire special services of the health centers attached to it.

The Report is evidently a lengthy one but it brings out several points of interest to health workers in this country. Not the least of these is the plan laid down for a new type of health authority to bring about unity of local control for all health services both curative and preventive. It is suggested that the "health authority" be invested in a body which is either a statutory committee of the existing local government or an independent body. Three-fifths of the members of this committee are to be elected by popular vote, the remaining two-fifths to consist of persons whose special knowledge would be of value in health questions. A majority of these should be nominated by the local medical advisory council. This council should consist of 10 to 20 persons elected periodically by and from the registered practitioners resident in the area. The health officer and his two chief assistants should be ex-officio members of this advisory council.

The plan outlined is comprehensive as well as extensive.

Whether or not it will be adopted remains to be seen. In any event the present report is not final. Regardless of these considerations, however, the fact remains that the time is not far off when in America it will be necessary to take cognizance of the lack of a uniform health service and to adopt a plan which will supply a uniform all-including program for the present dilatory methods and palliative measures which now exist.—*Homer N. Calver.*



The Human Costs of the War. Homer Folks, Harper & Brothers, 1920. 326 pages. Illustrated.

Colonel Homer Folks as organizer and director of civil affairs for the American Red Cross in France and later as Special Commissioner to southeastern Europe, had an opportunity afforded to few to estimate at first hand the toll in sickness, suffering and death exacted as a part of the price of the world war. From his previous wide experience in public health and social economics, he was unusually well qualified to undertake such a task of human bookkeeping. Under the above title the author describes his investigations in detail.

Starting from France on Armistice Day, Col. Folks and his party made a survey of the war-stricken countries for the purpose of estimating the net results of the conflict on human welfare and of reporting how best the conditions found could be met.

The countries visited included Serbia, Belgium, France, Italy and Greece. In each of these countries the attempt was made to secure at first hand the actual facts regarding the condition of the people in respect to food, clothing, housing, health, including the ravages of the various communicable diseases, and also the number of widows and orphans left dependent as a result of the war.

Some conception of the terrific conditions facing the stricken countries can be gathered from the author's estimates that 10,000,000 people are homeless as a result of the war; that 42,000,000 more were subjected to the indignities and deprivations of enemy rule, that 9,000,000 soldiers died of wounds or disease; that there are

50,000,000 manless homes and 10,000,000 homes without children, where there would have been children under normal conditions.

The somber subject matter of the book is lightened by the power of the author to portray the scenes of desolation and the ghastly facts in a manner that holds the interest of the reader.

As the author is a prominent public hygienist his report of conditions in the devastated regions will be of particular interest to other workers in this field.—*B. R. R.*



Medico-Military Review. This is a mimeographed publication of 15 to 20 pages, issued semi-monthly as a supplement to the Bulletin of the Surgeon General's Office. It was established December 1, 1919, and has a circulation of 750 distributed to reach all officers of the Medical Department of the Army. The circulation list also includes a few civilians, medical libraries, and medical journals, which have requested the addition of their names to the mailing list.

The Review is edited by the Division of Laboratories and Infectious Diseases of the Surgeon General's Office and serves as a medium through which news items of current interest, especially those of a medico-military nature, and information bearing upon the problems of disease control, abstracts of important articles appearing in Medical Journals and notes on investigations being carried on in the Army, can be placed in the hands of officers of the Medical Department. Each issue contains a statistical report of the U. S. Army hospital bed capacity and current admission rates of the important communicable diseases.



Healthy Living. Books I and II. Charles-Edward Amory Winslow, D.P.H. Enlarged edition. Each with a chapter by Walter Camp. New York and Chicago: Charles E. Merrill Co. \$0.84 and \$1.12 respectively.

When Professor C.-E. A. Winslow wrote his little books on healthy living two or three years ago they were recognized at once as a wide departure from the stereotyped form of text book on health and hygiene. They appealed especially to the younger generation, although grown-ups were by no means excluded, through the novel presentation of the various subjects, the topics being the central thoughts of

well-written little stories rather than of condensed paragraphs. Interest of children, for example, is excited in the preparation made by the knights of old who in their training were taught to conserve health and strength for their future great work. Chapters on clothing impress the children with the relation of garments to health; classic stories of achievements of strong men are narrated to induce the young of today to preserve their health; and suggestions are made with reference to exercises and the methods of keeping in training.

Under the heading, "Fuel for the Body," children are told of the values of different kinds of foods, and it is thus early impressed upon them that the diet has most important duties in keeping the human machine going smoothly. In this connection, an ideal day's food in three meals is suggested. Through calling attention of the children to the teeth of the dog or cat, they are given a little lesson serving to show them that with their own different kinds of teeth, they are entitled to make use of both meat and grain foods. The value of good teeth, the necessity for cleansing them, and matters of like importance are emphasized by a little story of the "Battle of the Brushes," in which at a meeting one after another sets forth his rights to be chairman, the broom claiming that he bears the brunt of the day's work in the house, and the clothes brush and hair brush bringing forth their various merits, but the tooth brush finally being selected on account of its fundamental necessity.

Microbes, the mouth as a gateway to the body, the necessity for fighting the fly and mosquito, and the spread of germ diseases are topics considered in successive chapters, the spread of the germs being brought home to the children through a reference to the game of "Button, button, who's got the button." If the first boy put the button into his pocket, there would not be any game. In the same way, if the first child coming down with a disease were prevented from passing the germs to some one else, this would be practical prevention.

The second volume is of higher grade than the first, speaking from the school teacher's point of view. It considers more closely and intimately the living machine,

the bony system, the circulatory system, the relation of air to health, the value of cleanliness, the necessity for pure water and good food, the fighting of insect pests, and the control of communicable diseases. How germs pass from mouth to mouth is discussed, and the illustrations show two little school girls doing their sums with the same pencil and each moistening the pencil in her mouth. Questions for discussion and review follow all of the chapters.

The volumes are well illustrated with pictures that appeal to the little student, and useful tables are a part of the second volume. For both of the volumes, Walter Camp has written a chapter on the relations of physical exercise to health, and other important additions have been made since the publication of the earlier volumes.

✦

Handbook on Health and How to Keep It. Walter Camp. D. Appleton & Co. 1920. Pp. 210 and XIV. Price \$1.50.

Mr. Camp's book is written in an extremely interesting style. Far from being a prosaic list of rules for health, it abounds with interesting personal items illustrating the principles he presents. The five chapters are upon the following subjects: Problems of Youth and Age, Daily Dozen Set-Up, Reviewing Follies, Children, Schoolboy and Collegian and Industrial Workers.

The Daily Dozen Exercises were devised by Camp primarily for use in army and navy drills. Camp emphasizes that the important thing in exercise is to give the abdomen and thorax the most attention. The arms and legs, he says, get a fair amount of exercise anyway, even under sedentary conditions, whereas the vital organs ordinarily do not receive their fair share of exercise. Accordingly the daily dozen are devoted very largely to bending exercises of one kind or another.

Camp claims that 10 minutes per day with the daily dozen combined with 20 or 30 minutes of walking or other light exercise in the air, even the brain worker can maintain the best health, and cites the records of cabinet officers and other government officials who during the war labored at Washington, D. C., under the most strenuous conditions, but remained fit through the moderate exercise recommended.

A. W. H.

ASSOCIATION NEWS

HEALTH EMPLOYMENT BUREAU HELP WANTED

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the first of each month. In answering keyed advertisements, please mail replies separately and to editorial office in Boston, Mass.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

A Progressive Superintendent of Health for a city of 70,000 population. Salary \$3,500. Experience necessary. Address Z. F. 388, care of this *Journal*.

Assistant Bacteriologist. Salary \$1,800. Applicant must have college degree, graduate in medicine preferred. Apply to Commissioner of Health, Baltimore, Maryland, stating educational training, experience and references.

Medical Assistant for 75-bed Tuberculosis Sanatorium. Must be single, with experience in diagnosis of Tuberculosis. Salary \$2,000, with increase in reasonable time to good man. Send credentials to Dr. James A. Price, Irene Byron Hospital, Fort Wayne, Ind.

POSITIONS WANTED

Position-wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office by the first of the month.

Will be at liberty to accept location as health officer or to do general sanitary and publicity work about October 1. Now have the rank of Major in Reserve Corp and commission in Public Health Service as P. A. Surgeon. Further details by correspondence. Address 128, W. W. E., care of this *Journal*.

Wanted: Position as Medical Inspector of Schools by a Woman Physician experienced in this work. California preferred. References. Address H. C. M., 126, care of this *Journal*.

A young woman, college graduate with one year of post-graduate work, wants a position as head of a laboratory. Experience in bacteriology, serology, and chemistry acquired in both hospital and Public Health work. Prefers location in Ohio, but all good offers considered. Address P. H., 130, care of this *Journal*, Boston address.

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

August 3 to September 7, 1920, inclusive.

Names of Sponsors are set in Bold Face Type.

Names of New Members are in Light Face Type.

ALABAMA

- J. D. Dowling, M. D., Birmingham.
A. D. Brown, Chief Sanitary Officer, Birmingham.
W. H. Godwin, M. D., Birmingham.
B. C. Howse, Sanitary Inspector, Fairfield.
H. T. McGhee, M. D., Pratt City.
H. G. Taggart, Wynnum.

CALIFORNIA

- W. H. Kellogg, M. D., B. of Health, Berkeley.
Stannley B.
Walter T. Harrison, M. D., Asst. Surgeon, U. S. P. H. Service, San Francisco.
Louis L. Williams, M. D., Asst. Surgeon General, U. S. P. H. S., San Francisco.
L. M. Powers, M. D., Los Angeles.
Elmer R. Pascoe, M. D., Assistant Health Commissioner, Los Angeles.
L. R. Bauefort, M. D., Los Angeles.
Minnie Fotts, R. N., Fresno.
Pauline J. Pitney, Supervisor of Nursing, Los Angeles.
Adelaide C. Brown, R. N., Oakland.
R. A. Archibald, Oakland.
Walter J. Stewart, D. V. S., M. D., Oakland.

- S. P. S. Edwards, M. D., Ontario.
F. F. Abbott, M. D., Ontario.
W. M. Biedle, M. D., Sacramento.
F. O. Pryor, M. D., Health Officer, Santa Rosa.
Molly H. Orr, R. N., San Bernardino.
Mrs. F. C. Brunette, Salinas.
Edith G. Wadland, R. N., Salinas.
Mary L. Cole, R. N., San Francisco.
Lillian J. Martin, M. D., San Francisco.
William C. Hissler, M. D., San Francisco.
Lawrence Arnstein, Jr., San Francisco.
Helen C. Welch, R. N., San Francisco.
Agnes Walker, M. D., San Francisco.
Millicent Cogswell, M. D., San Francisco.

CONNECTICUT

- Ettore Champollum, M. D., New Haven.
Mudr Ladislav Prochazka, Prague, Czechoslovakia.
Philip S. Platt, New Haven.
Frank E. Platt, Seranton, Pa.
A. W. Hedrich, Boston, Mass.
John H. Hoover, M. D., Health Officer, Voluntown.

FLORIDA

- Ralph N. Greene, M. D., Jacksonville.
 John M. Whitfield, M. D., Panama City.
 A. C. Hamblin, M. D., Tampa.
 Eddie L. Morress, Perry, Taylor County.
 A. W. Hedrich, Boston, Mass.
 A. C. Hamblin, M. D., Tampa.

GEORGIA

- H. N. Old, Thomasville.
 John Schreiber, M. D., County Health Officer, Thomasville.
 A. W. Hedrich, Boston, Mass.
 American Red Cross, Dept. of Civilian Relief Library, Atlanta.

IDAHO

- A. W. Hedrich, Boston, Mass.
 Emery M. Roller, Moscow.

ILLINOIS

- W. A. Evans, M. D., Chicago.
 James M. Dinnen, M. D., Ft. Wayne, Ind.
 John Dill Robertson, M. D., Chicago.
 E. A. Selinger, M. D., Health Department, Chicago.
 John C. Alford, Supervisor, Department of Health, Chicago.
 Herman B. Meyers, Publisher, American Food Journal, Evanston.
 Martin M. Ritter, M. D., Chicago.
 Moor Mud Baths, Atten. John Weber, Jr., Mgr., Waukegan, Wis.
 Edmond A. Holberg, M. D., Supervising Health Officer, Chicago.
 Paul Hansen, Chicago.
 W. C. Clarke, M. D., Cain.
 C. M. Roos, Water Works Superintendent, Cairo.
 M. Kern, M. D., Chicago.
 Henry M. Hollister, Chicago.
 S. S. Winner, M. D., Chicago.
 John C. Foley, M. D., Health Officer, Waukegan.
 A. W. Hedrich, Boston, Mass.
 Fred Wendell, Chicago.
 W. J. Harding, Decatur.
 Hugh S. Baker, City Milk and Dairy Inspector, Decatur.
 Clyde S. Jones, M. D., East St. Louis.
 Hampton W. Edwards, R. N., Poplarville, Ky.
 W. J. Garard, M. D., Galesburg.
 B. A. Harrison, M. D., Colechester.
 A. W. Bouseman, M. D., Health Officer, Fountain Green.
 Edith X. Holstrom, Geneseo.
 American Red Cross, Moline.
 H. M. Bascom, Peoria.
 George W. Burton, Peoria.
 C. St. Clair Drake, M. D., Springfield.
 J. J. Lahey, Madison.
 Harold H. Roberts, M. D., Maywood.
 Frank S. Needham, Commissioner of Health, Oak Park.
 Department of Public Health, Springfield.

IOWA

- Edyth Howerton, R. N., Esterville.
 Hannah Sandquist, School Nurse, Marshfield, Ore.

MARYLAND AND DISTRICT OF COLUMBIA

- Mrs. Francis K. Carey, Baltimore.
 Emily B. Bally, Baltimore.
 Charles J. Bonaparte, Baltimore.
 Helen H. Carey, Associate Director Children's Playground Ass'n, Baltimore.
 Mrs. Franklin P. Cator, Baltimore.
 Mrs. Benjamin W. Corkrae, Baltimore.
 B. Howell Griswold, Jr., Baltimore.
 Mrs. Francis M. Jepeks, Y. P. Women's Civic League, Baltimore.
 W. H. Maithe, Baltimore.
 James H. Preston, Baltimore.
 Provident Hospital, Baltimore.
 L. Wardlaw Miles, Head Master, Gilman County School, Baltimore.
 Mary Gordon Thom, Baltimore.
 Miles White, Jr., Baltimore.
 Richard J. White, Trustee, Johns Hopkins Hospital, Catonsville.
 Louisa McE. Fowler, Head of St. Timothy's School, Catonsville.
 Mrs. James Findlay, Hagerstown.
 Civic League, Sugar City, Colo.
 Mrs. William A. Perry, New York City.
 Roscoe G. Brown, M. D., Washington.
 Aldrich R. Burton, M. D., U. S. P. H. S. Lecturer, Washington.
 Major Wm. H. Lloyd, M. C., Camp Meade.
 Arthur G. Counbe, M. D., Washington.

Sol Pineus, Washington.

- Jool I. Connolly, Lincoln, Neb.
 Lieut. Alan Sutton, Washington.
 Major P. F. McGuire, M. C., U. S. A., Army Medical School, Washington.
 Major Samuel A. Whitte, M. C., U. S. A., Army Medical School, Washington.
 A. W. Hedrich, Boston, Mass.
 National Canners' Association, Attention.
 Frank E. Gorrell, Secretary, Washington.

MASSACHUSETTS

- A. W. Hedrich, Boston, Mass.
 O. L. Boye, Sykehus, Bergen, Norway.

MICHIGAN

- W. J. Deacon, M. D., Lansing.
 S. R. Hill, M. D., State Department of Health, Lansing.
 W. C. Hlra, Lansing.
 Edmund H. Eitel, Highland Park, Ill.
 J. Ritchie, Jr., Boston.
 Michigan State Normal College, Atten. of E. McClellan, Ypsilanti, Mich.

MINNESOTA

- C. E. Smith, Jr., M. D., St. Paul.
 G. W. Moore, M. D., Health Officer, Hopkins.
 George A. Love, M. D., County Health Officer, Preston.

MISSISSIPPI

- W. S. Leathers, M. D., University.
 Dr. Petrlich, New York City.

MISSOURI

- C. W. Schery, M. D., St. Louis.
 Charles M. Denison, M. D., Pathologist and Bacteriologist, St. Louis.
 Dora J. Silverman, M. D., St. Louis.
 A. W. Hedrich, Boston, Mass.
 Laura E. Mann, R. N., Director of Nursing, Independence.

MONTANA

- Clara A. Link, R. N., Red Lodge.
 Bess E. Lawler, R. N., Kelso, Washington.

NEW JERSEY

- E. M. Reilly, M. D., Montclair.
 Bayard T. Garrabrant, Sanitary Inspector, Montclair.
 Louis Schneider, M. D., Newark.
 Francis E. Knowles, M. D., So. Orange.

NEW MEXICO

- C. E. Waller, M. D., Santa Fe.
 Gladys L. Harris, P. H. N., Albuquerque.
 Harriet C. Moreno, R. N., Magdalena.
 Hon. J. H. Wagner, State Supt. of Public Instruction, Santa Fe.

NEW YORK

- Edward S. Godfrey, M. D., Albany.
 John L. Rice, M. D., State Board of Health, Albany.
 B. R. Rickards, Albany.
 G. B. Clark, M. D., Health Officer, Armonk.
 Jacob Gutman, M. D., Brooklyn.
 Charles Norris, M. D., Chief Medical Examiner, New York City.
 Louis C. Wood, M. D., Poughkeepsie.
 Howard P. Carpenter, Director, Hudson River State Hospital Laboratory, Poughkeepsie.
 Albert M. Bell, M. D., Health Officer, Sea Cliff.
 George E. Hannett, Syracuse.
 Clarence Goldsmith, Chicago, Ill.
 Edward Clark, M. D., Buffalo.
 W. H. Baker, M. D., State Health Officer, Williamsville.
 J. A. Conway, M. D., Hornell.
 J. H. Van Marter, Groton.
 Halsey J. Ball, M. D., Glen Falls.
 Walter A. Leonard, M. D., Health Officer, Cambridge.
 John J. Mahoney, M. D., Jamestown.
 Edwards J. Loughlin, M. D., Health Officer, Andover.
 Jasper W. Collier, M. D., Health Officer, Wellsville.
 George W. Roos, M. D., Health Officer, Wellsville.
 Walter L. Dodd, New York City.
 Mr. Harry P. Hammond, Sanitary Engineer, Brooklyn.
 Mrs. Ethel M. Hendriksen, Rochester.
 Isaac Adler, Rochester.
 Willis W. Bradstreet, M. D., Health Officer, Rochester.
 John F. Forbes, M. D., Rochester.
 Mrs. Rose E. Stuber, Rochester.
 A. W. Hedrich, Boston, Mass.
 Herbert N. Shenton, Columbia University, New York City.
 Eva F. MacDougall, New York City.

OHIO

- Louise Stitzenstock and
 G. E. Harmon, M. D., Cleveland.
 Annie E. Irving, Superintendent of Nurses,
 Huron Road Hospital, Cleveland.
 A. W. Hedrick, Boston, Mass.
 H. C. Schoepfle, M. D., Department of Health,
 Sandusky.

OKLAHOMA

- Ruth Frances Horel, Oklahoma City.
 F. R. Horel, M. D., County Health Officer,
 Arelata, Cnl.

PENNSYLVANIA

- Lawrence M. Rosenfeld, Ph. D., Philadelphia.
 Mr. K. Hobart Roatch, Clinical Chemist, Phila-
 delphia.

RHODE ISLAND

- B. U. Richards, M. D., Providence.
 L. C. Clark, Providence.
 Howard Edwards, LL. D., President, State Col-
 lege, Kingston.
 Lester A. Round, Ph. D., and
 Prof. F. P. Gorham, Providence.
 Minot J. Crowell, Central Falls.

TENNESSEE

- A. W. Hedrick, Boston, Mass.
 J. J. Durrett, M. D., Superintendent of Health,
 Memphis.

UTAH

- T. P. Bentley, M. D., Salt Lake City.
 American Smelting & Refining Co., Atten. of
 Roy A. White, Salt Lake City.

VERMONT

- Charles F. Dalton, M. D., Burlington.
 C. B. Crowell, Brattleboro.

VIRGINIA

- Robert A. Martin, M. D., Petersburg.
 H. A. Burke, M. D., Venereal Clinic, Peters-
 burg.
 Claiborne Powell, City Physician, Petersburg.

WEST VIRGINIA

- S. L. Jepson, M. D., Charleston.
 C. A. Cabell, Carbon.
 C. A. Penrose, Joelton.
 G. K. Cabell, Wevaco.

WISCONSIN

- W. W. Johnson, M. D., Racine.
 Central Association, Atten. of Miss Katy Men-
 der, Racine.
 Edith C. Chaudler, Exec. Secretary, Racine
 Chapter, A. B. C. Racine.
 H. L. Wilson, M. D., Racine.
 Catherine Pfister, Public Health Nurse, Racine.

CANADA

- J. W. S. McCullough, M. D., Toronto, Ont.
 Institute of Public Health, Atten. H. W. Hill,
 M. D., London, Ontario.

PHILIPPINE ISLANDS

- A. W. Hedrick, Boston, Mass.
 Rafael Villafranca, M. D., District Inspector,
 Lucena, Tayabas, P. I.

CONVENTIONS, CONFERENCES AND MEETINGS

October 4-7, Pittsburgh, Pa.—Medical So-
 ciety of the State of Pennsylvania.

October 4-7, Waterloo, Ia.—Tri-State Dis-
 trict Medical Society.

October 4-8, Montreal, Can.—American
 Hospital Association.

October 4-10, Montreal, Can.—American
 Association of Occupational Therapy.

October 6-7, Providence, R. I.—New Eng-
 land Surgical Society.

October 6-8, Chicago, Ill.—American Asso-
 ciation of Railway Surgeons.

October 7-8, Augusta, Me.—Maine Public
 Health Association.

October 7-8, Richmond, Va.—North Atlan-
 tic Tuberculosis Conference.

October 7-8, Rutland, Vt.—Vermont State
 Medical Society.

October 9, Ottawa, Can.—Canadian Asso-
 ciation for the Prevention of Tuberculo-
 sis.

October 11-12, Wilmington, Del.—Delaware
 State Medical Society.

October 11-13, St. Louis, Mo.—American
 Child Hygiene Association.

October 12-13, Oklahoma City, Okla.—
 Oklahoma State Public Health Confer-
 ence.

October 12-14, Chicago, Ill.—Mississippi
 Valley Medical Association.

October 15-16, Roswell, N. Mex.—New
 Mexico State Medical Society.

October 19-20, Omaha, Neb.—Nebraska
 State Nurses' Association.

October 20, Lakewood, N. J.—New Jersey
 Anti-tuberculosis League.

October 21, Montreal, Can.—Royal Edward
 Institute.

October 22-26, New York City—American
 Dietetic Association.

October 27, Albany, N. Y.—New York
 State Association of Public Health Lab-
 oratories.

October 28, Boston, Mass.—Massachusetts
 Association of Boards of Health.

October, Milwaukee, Wis.—Wisconsin
 Anti-tuberculosis Association.

November 8-11, Louisville, Ky.—Southern
 Medical Association.

November 13, Boston, Mass.—Massachu-
 setts Society for Social Hygiene, Inc.

November 15, Louisville, Ky.—American
 Association of Medical Milk Commis-
 sioners.

November 20-23, San Antonio, Tex.—Texas
 State Conference Social Welfare.

November 22, Washington, D. C.—Associa-
 tion for the Prevention of Tuberculosis
 of the District of Columbia.

December 2, Providence, R. I.—Rhode
 Island Medical Society.

December 6, Petersburg, Va.—Medical So-
 ciety of Virginia.

December 6-30, Washington, D. C.—Re-
 gional Health Conference.

December 12-20, Montevideo, Uruguay—
 Sixth International Sanitary Conference
 of the American Republics.

PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Public Health Surveys.—Dr. Harold B. Wood defines a public health survey as an accounting of the health conditions and needs of a community. The purpose of a health survey is to detect the presence and correlation of all conditions and factors affecting health, and to formulate practical and economical measures to decrease disease and increase comfort. A survey serves as a guide for city planning, municipal development, health activities, and charitable services. The scope of a health survey is outlined as follows:

Introduction—

- Brief historical outline.
- Geographical location.
- Geological formations.
- Racial settlements and distribution.
- General review of public health and physical efficiency.
- Industrial developments.

Vital Statistics—

- Population, growth and influencing factors.
- Birth and death rates, giving trend and reasons.
- Influencing factors and how to control them.
- Racial characteristics of birth and death rates.
- Reportable diseases, prevalence and rates.
- Methods of control and their effects.

Child Welfare—

- Prenatal influences, effects, solution.
- Infant mortality, factors, causes, and solution.
- Preschool problems.

School Children—

- Statistics, distribution, effect of location upon schools.
- Prevalence of diseases among school children, control.
- Medical inspection.
- School buildings and grounds.

Communicable Diseases—

- Statistics of outbreaks; sources and methods of control.
- Public protection against disease.
- Educational work done and needed.

Tuberculosis—

- Prevalence, factors, distribution, causes.

Local modes of transmission, house influences.

Dispensary effects and community needs.

Typhoid Fever—

Prevalence, transmission, protection.

Venereal Disease—

Dangers, prevalence, prevention.

Food Supplies—

- Conditions of production and storage.
- Adulteration and wholesomeness.
- Degree of inspection and results.
- Disposal of spoiled or poor foods.
- Prevalence of diseases among handlers.

Milk Supply—

Amount, source, distribution, availability, safety and cleanliness, city standard bacterial counts, causes, variations, trend.

Water Supply—

Source, safety, quality, distribution, protection, control, results.

Sewage Disposal—

Methods, proportion, distribution, safety, local effects, treatments of sewage.

Garbage Disposal—

Methods, desirability, nuisances, control.

Street Cleaning—

Methods of collection and disposal of rubbish.

Personal Hygiene—

- Standards of living and effects.
- Overcrowding, housing conditions, tenementation.
- Condition and use of yards and lots.
- Parks and playgrounds.

Industrial Hygiene—

- Kinds, distribution and sanitation of factories.
- Occupational diseases: prevalence and control.
- Industrial accidents: prevalence and control.
- Sanitary improvements and social welfare.

Health Department:

- Development, methods of appointment.
- Divisions, efficiency and needs.
- Activities, methods, results obtained.
- Budget; distribution and needed changes.
- Recommendations.

Modern Medicine, May, 1920—(M. P. H.)

Meningococcus Carriers.—The writers give the results of an investigation of 903 carriers who were examined and treated at the Army cerebrospinal fever center at Netley, between September, 1916, and April, 1919. Of the 903 examined, 86 (9.5 percent.) were case carriers after cerebrospinal fever, and 819 (90.5 percent.) were apparently healthy accidental carriers, who had not showed any signs of the disease. The case carriers remained infected for an average period of $5\frac{1}{2}$ months, the longest period in any one case during which meningococci were observed being 634 days. Accidental, or healthy, carriers remained infected for an average period of 24 days, discharge from isolation being effected as follows:

9.3 percent of the healthy carriers were discharged during the first week, and for the second, third and fourth weeks the figures run 14.8, 17.2, and 15.3. Two succeeding fortnights give percentages of 12.0 and 11.3 respectively, the total for the eight weeks being 79.9 per cent.

Carriers were treated in various ways—in "inhalation chambers" with chloramine T and zinc sulphate, by hand-spraying with flavine and adrenalin, with chloramine in paraffin, and with "electrosal," and by the direct application of perchloride of iron and of mercuric ointment. It did not appear that any of the methods employed had any effect on the meningococci in the nasopharynx. It appeared, rather, that some of the forms of period. Seventeen of the carriers who were treated with either chloramine or zinc sulphate for a period of 102 days remained carriers at the end of the treatment; and cultures taken from the nasopharynx within half an hour of exposure to the "Levieck Spray," with either drug, frequently yielded a pure growth of meningococci. The cocci, found in the nasopharynx of a carrier, did not tend to alter in type throughout the carrying period; amongst the 903 carriers a change of type was observed in only a single case.—D. Embleton and G. H. Stevens, *Jour. Roy. Army Med. Corps*, 1919, XXXIII, 312.—(D. G.)

+

Standardization of Municipal Health Organization.—It is very doubtful whether it is desirable to standardize the organization and detailed activities of health departments. Very often there are variations in traditions, customs and other circumstances which make

standardization not only impossible but undesirable. The fundamentals in public health work are the same for all cities and should be standardized. The best solution of a particular community's problem is a careful study of that problem, leading to a special plan to meet the particular conditions that prevail. As far as possible, however, health departments should attempt to divorce themselves from street cleaning, collection and disposal of refuse, housing inspection and plumbing inspection. They should, however, maintain supervision and control of these functions insofar as they affect the health and welfare of the people. In order to accomplish its aim to prevent disease, protect the public health, and eliminate corrigible physical and mental defects, a health department should have the following divisions: administration, vital statistics, child hygiene, industrial hygiene, communicable diseases, public health education, sanitary engineering, food inspection and hospitals and sick relief. The health officer should attempt as far as possible to cooperate with and utilize the voluntary and unofficial agencies in a community that are interested and active in promoting the public health. Very often these volunteer organizations are pioneers in health problems and can be used as experimental stations in public health work. It is important, however, that the health officer should be able to supervise all the health activities which go on in a community.—Allan J. McLaughlin, M. D., *Public Health Reports*, April 30, 1920.—(M. P. H.)

+

How to Tell Bad Canned Food.—A can, the contents of which is suitable for consumption, when opened should be free from swell or escaping gas. The contents should have the proper color, texture, odor for the product canned, and should be absolutely free from any form of offensive odor. All these things should be noted before the product is tasted.

On the other hand, if the vegetable, fish, meat, or fruit in the can smells and looks wholesome, as far as is now known there is no danger from its consumption. The home canner, therefore, can go ahead with her canning operations, feeling sure that her family will be safe from food poisoning if she observes the simple precautions.—Weekly News Letter, June 23, 1920, U. S. Dept. Agric.—(J. A. T.)

SERBIAN HEALTH POSTERS

This spirited poster, prepared for the Red Cross work in Serbia by the artist who designed the very attractive posters for the tuberculosis campaign in France under the coöperation of the International Health Board and the French Government, illustrates one of the means of attacking this disease in a stronghold. The idea of warfare is admirably carried on by the soldier rushing to attack the foes, while the method of dissemination from the sick man to the well soldier is shown above. The legend of the poster is the following:

TYPHUS

IS CARRIED FROM THE SICK
TO THE WELL
BY THE LOUSE
HE BITES THE SICK MAN AND THEN
INFECTS THE WELL

Then in the lighter letters to the left is the warning, "The trenches of the louse are the seams of the clothing," and below, again in large letters, "It is necessary to fight the louse."



The second poster is a lesson in cleanliness. The man bathing in the primitive tub of the Continent, with the kettle of hot water at hand with which to keep his bath hot, is surrounded by the legend, "To avoid typhus, get rid of lice." Then in lighter letters is the query, "How?" and underneath is the answer, "By plenty of bathing and washing of the clothing," illustrated by the woman at work with her laundry.

The question of typhus is not one that has disturbed the United States very much thus far, save on its tropical borders, but in the central European countries it is a very serious problem and one which the authorities since the beginning of the war have been endeavoring to solve.

These posters come to the Journal through the courtesy of Mr. Edward Stuart, till very recently in charge of the work in France.

STATE HEALTH NOTES— LEGISLATION

Canada, Opium and Narcotic Drug Act and Amendments.—Through the courtesy of J. A. Amyot, M. D., Deputy Minister, Canadian Department of Health, the JOURNAL is able to present a summary of the legislation in the province with reference to opium and narcotics.

Under the Act of 1911 provision is made for confining the use of opium and narcotic drugs to medicinal or scientific purposes and the sale of these drugs is confined to physicians, veterinary surgeons, dentists, bona fide wholesale druggists or retail druggists, or on prescriptions issued by physicians, veterinary surgeons or dentists for medicinal purposes, or when prescribed for the medical treatment of a person under professional care by such physician.

All druggists, wholesale and retail, are required to record the sale of these drugs in a suitable book.

Under this Act it is an offense for any person to smoke opium or to have in his possession opium prepared or being prepared for smoking. It is also an offense to export or attempt to export any narcotic drugs from Canada to a foreign country which prohibits their entry.

The drugs mentioned in the schedule to this Act are as follows: cocaine or any salts or compounds thereof, morphine or any salts or compounds thereof, opium, eucaïne or any salts or compounds thereof.

In May, 1918, an Order-in-Council was passed under the War Measures Act restricting the importation or exportation of these drugs under license. This Order-in-Council was superseded on December 31, 1919, by an Act of Parliament perpetuating the licensing system. These licenses are issued for each individual shipment imported or exported and in the case of an import license, is conditional on the importer taking an affidavit that he will report his sales of the drugs so imported under license, to the Department of Health at the end of each month.

When these reports are received in the Department they are carefully tabulated and show the quantity of drugs received by all druggists, physicians, dentists and veterinary surgeons. Where it is noticed

that any of the persons mentioned receive what are considered abnormal supplies, the matter is further followed up and detailed statements are required showing the disposition of the drugs so received. In this way the Department is in a position to trace these drugs from the time of importation into Canada through the wholesaler, retailer and physician and find out exactly how the drugs were actually used or consumed.

It might be here mentioned that this system has been found to be very effective and the Department has been successful in reducing, by an enormous quantity, the amount of drugs imported into Canada as compared with the quantities imported during a similar period before the restrictions became effective. We have also been very successful in stamping out to a very large extent the practice of physicians prescribing these drugs to addicts simply to supply their appetite in this regard and not in an attempted cure of the habit. This system has also been the means of searching out those druggists who have been dealing illicitly in these drugs in the past.

At the recent session of Parliament a further Amendment to the 'Opium & Narcotic Drug Act' was passed, which is to be proclaimed and become effective on September the 1st next. This Act goes much further than the previous legislation in dealing with the handling and control of these drugs in Canada.

Under the existing Act various penalties are provided for different offenses, as for instance persons dealing in these drugs other than those permitted by law: druggists furnishing drugs to persons other than on prescription: physicians prescribing drugs for other than medicinal purposes: persons found guilty of conducting opium dens: These offenses are all enumerated under different sections and the penalties vary from a maximum fine of fifty dollars to five hundred dollars or from three months imprisonment to a year according to the offense committed under the Act.

Under the new Act the offense is made the same and the penalties provided are a fine not exceeding one thousand dollars and costs and not less than two hundred dollars and costs, or to a term of imprisonment for one year, or to both fine and imprisonment.

In addition to requiring a license for each individual importation or exportation, all wholesale druggists and manufacturers and all retail druggists who manufacture narcotic drugs or preparations containing the same are required to obtain an annual license to deal in these drugs, and all druggists who do not manufacture and all physicians, veterinary surgeons and dentists are required to furnish the Department with a declaration stating that they are engaged in the sale or distribution of these drugs.

Provision is also made under the Act whereby all physicians, veterinary surgeons and dentists are required to furnish on request, any information under any regulation made under the Act with respect to the drugs received, dispensed, prescribed, given away or distributed. Refusal to furnish such information incurs a penalty of not more than one thousand dollars and costs or not less than two hundred dollars and costs or to a year of imprisonment, or to both fine and imprisonment.

In addition to requiring all druggists, wholesale or retail, and all manufacturers to keep a record of their sales of these drugs they will be required under the New Act to keep a record of their receipts showing from whom received and the quantity, etc., and the date. They are also required to keep a record of the quantity of narcotics used in manufacturing together with a record of the quantity of such preparations manufactured.

Under the new Act provision is made for the marking and packing of opium and narcotic drugs, which are intended for export, in such a manner as to denote clearly the contents of the packages.

The number of ports or places in Canada where these drugs may be imported or exported is limited.

Provision is made in this Act for the sale of preparations (without prescription) containing a limited quantity of narcotic drugs to the liquid ounce similar to the quantities permitted under the Harrison Narcotic Law of the United States, but such preparations are required to contain active medicinal drugs other than the narcotic in sufficient proportion to confer upon the preparation or remedy valuable medicinal qualities other than those possessed by the narcotic drugs alone, and further such preparations must have printed in a con-

spicuous place on the main panel or label on the wrapper of the bottle, box or container, the following warning,

"IT IS UNLAWFUL TO ADMINISTER THIS PREPARATION TO A CHILD UNDER TWO YEARS OF AGE AS IT CONTAINS (INSERT NAME OF DRUG) AND IS DANGEROUS TO ITS LIFE."

The schedule to the Act of 1911 has been amended by adding after the word "opium"—"Or its preparations, or any opium alkaloids or their derivatives, or salts or preparations of opium alkaloids or their derivatives."

✦

California.—Pasadena has just passed an ordinance which requires the physical inspection and medical examination of all food handlers, and provides for the exclusion of persons having active cases of tuberculosis, venereal disease and other communicable diseases from all occupations related to food production and handling. This is the first city in the state to follow the example of New York and other Eastern cities.

✦

Delaware.—The State Board of Health adopted in July a resolution requiring the tuberculin testing of dairy herds unless the milk be pasteurized. On and after August 1, 1920, no milk or cream shall be sold within the state unless it is pasteurized according to the regulations of the Board, or unless it is obtained from cows that have successfully passed the tuberculin testing within one year, the cows being numbered with non-removable ear tags and the records properly kept. A penalty is attached to violation of this regulation.

A further regulation provides that no person other than a duly licensed physician shall practice midwifery in the state unless such person shall be duly licensed as a midwife by the State Board of Health. The regulation demands a license every year and any person may make complaint of the incompetency of a midwife or the failure to report births. Persons desiring to obtain license are required to furnish suitable references as to cleanliness, education, character, and experience. A penalty is provided for failure to fulfill the requirements of the regulation.

New York.—Under the provisions of a law passed at the last session of the legislature, the Health Bureau, Albany, N. Y., became a separate department, on July 1. Dr. Clarence W. Buckmaster will be the Commissioner, with a salary of \$5,000, and Dr. C. Umsted has been selected for Deputy, at a salary of \$3,300.

There will be a number of changes in the new department, the most important of which will be the taking over by the Health Bureau of the Tuberculosis Commission.

The State Department of Health adopted in April a number of amendments to the sanitary code. The first of these adds encephalitis lethargica to the diseases requiring notification and divides the latter into two groups for convenience of administration: One the ordinary diseases, and the other the venereal diseases. Another amendment adds encephalitis lethargica to the diseases that are to be reported by physicians if they are found in dairy farms, and this disease has been added to the list of those in which persons who may not be removed without the authority of the board of health, for which placards must be posted, and for which opportunities for contact infection are forbidden. Children from the household are excluded from the schools, and the patient is subject to removal to a hospital, isolation, or restriction of movement. The disease is among those that will debar the person from the handling of foods, and carriers of the disease germs shall be subject to the special rules and regulations of the State Department.

A further amendment forbids firms, corporations, or authorities owning, in charge of, or in control of a lavatory or wash-room in any hotel, lodging house, restaurant, factory, school, store, office building, railway or trolley station, or public conveyance by land or water, providing any towel for common use. The term "common use" here means for use by more than one person without cleansing.

+

New York City.—The Board of Health of the city of New York has amended the Sanitary Code to include the forbidding of the use of any animal hair that has not

been sterilized in the manufacture of brushes or cloth. The manufacturer of shaving brushes, tooth brushes, or other toilet brushes intended for human use shall cause his name or trademark, place of manufacture, and the word "Sterilized" to be permanently, clearly, and legibly painted or stamped on every such brush before offering it for sale in the city of New York. Provision is made that the word "sterilized" shall be safeguarded by the actual sterilization according to a process prescribed or approved by the Board of Health. No person in the city of New York shall sell or have in his possession with the intent to sell any brush which does not conform to this regulation. The Board of Health prescribes two processes of sterilization: Boiling the hair in water at a temperature of 212° F. for at least three hours; or placing the hair in an autoclave in which a ten-inch vacuum has been produced. Live steam at 15 pounds shall be kept up in the autoclave for three hours.

+

North Dakota.—A recent pamphlet issued by the State Board of Health contains the public health laws of the state together with the rules and regulations of the State Board.

+

Pennsylvania.—In the May issue of the *Pennsylvania Health Bulletin* the State Department of Health presents a *Synopsis of the Health Laws* of the Commonwealth. Three previous publications have dealt with the same laws, a *Digest of Health Laws* published in 1916 and two *Bulletins*, 97 and 103, issued in 1917 and 1919 respectively. The *Digest* and the *Bulletins* give the phraseology of the laws, while this *Synopsis* presents abstracts, noting the purpose of the law, referring to its place in the Acts, and outlining the penalties and naming the persons responsible and the courts before which any action should be brought. A second part of the *Synopsis* contains the regulations of the Advisory Board which have the force of law, while a third section includes the orders, rulings and instructions issued from the central office of the State Department of Health.

Legislation on Physical Education

In 1920 the General Assembly of Virginia, after passing a law requiring health examination, health instruction and the conduct of wholesome physical activities, has set aside \$25,000 for the State Board of Education, to be used for physical education in the public elementary and high schools, and an equal sum for the State Board of Health, to be applied to child welfare and school medical inspection. County boards of supervisors and city councils are authorized to make appropriations for health examinations and physical education and the employment of school nurses, physicians and physical directors.

The General Assembly of Kentucky has enacted a law requiring the State Board of Education to draw up a course of study in physical education for all common schools, occupying periods of not less than thirty minutes each school day devoted to instruction in health and safety, physical exercises, and recess play. A manual for the use of all teachers in common schools will be prepared by the Superintendent of Public Instruction in coöperation with the State Board of Health. Normal schools supported wholly or in part by public funds shall contain one or more courses in physical education.

In Mississippi the legislature has passed a law which becomes operative as soon as Federal assistance is available. This law provides that all pupils in elementary and secondary schools, whether public, private or parochial, shall receive instruction in physical education as prescribed by the State Board of Education, which is given considerable latitude in drawing up regulations.

The National Physical Education Service of Washington has been active in the different states aiding the local organizations in their movements towards physical efficiency as a national asset.

The JOURNAL requests State and Municipal Health Officers to send forward notes for this Section that can be helpful to other officials in similar positions. Exchange of experiences is a great educator.

STATE HEALTH NOTES—GENERAL

National and International.—The sixth International Sanitary Conference of the American Republics will be held in Montevideo, Uruguay, December 12-20, 1920, under the presidency of Dr. E. Fernández Espiro and the auspices of the Government of Uruguay. One of the features of the conference is to be a round-up of sanitary procedure and conditions in the republics represented. Each delegation is requested so send in a written memoir, accompanied by its abstract, to the Secretary of the Conference, 15 days before its opening. This memoir, which is for the information of other delegations, is to include the following items:

1. Sanitary laws, ordinances, and regulations imposed since the 5th Conference.
2. Adoption of the resolutions passed by the preceding conferences.
3. Enumeration of the contagious diseases which may have prevailed since the 5th Conference (in particular influenza), measures adopted to avoid its propagation, number of cases and deaths.
4. Considerations relative to the outbreak and development of bubonic plague; methods employed to combat it; their results.
5. Frequency of epidemic cerebrospinal meningitis, transmissible anterior poliomyelitis, and lethargic encephalitis.
6. Actual status of the combat against tuberculosis, yellow fever, malaria, trachoma, and ankylostomiasis.
7. Data relative to leprosy and the measures put in practice to prevent its diffusion.
8. Actual status of the combat against avariosis (venereal diseases).
9. Organization and operation of the service of disinfection. Work carried out.
10. Movement of population and rate of mortality during the last five-year period.
11. Water supply and sewerage service. Their extent.
12. Application of different systems of paving.
13. Organization and operation of the service of maritime sanitation.
14. Work of the Health Commissions of each one of the American Republics.

In response to a generally expressed desire for help in carrying on child welfare programs, the Children's Bureau of the U. S. Department of Labor has issued a set of outlines for the use of clubs and classes. These programs are comprised under five heads, the Community and the Child; Child Welfare in Rural and Village Communities; Care of the Mother, the Baby and the Young Child; Detailed Outlines on Infant Mortality, Children in Industry, Recreation, and Children in Need of Special Care; and Development and Present Status of Infant Welfare Work in Other Countries.

"What next?" is the question that thousands of bewildered children asked when the school doors closed behind them for the last time. An army of over 1,000,000 children between 14 and 16 years old, says the Children's Bureau, marches out of the schools each year to become wage earners. In a pamphlet entitled "Advising Children in Their Choice of Occupation and Supervising the Working Child" the Bureau tells what happens to these children and offers suggestions for helping them get the proper start in life.

The legal right to remain ignorant is annually granted to thousands of children in states where child labor and education laws are backward. According to an account of the administration of the Federal Child Labor Law soon to be published by the Children's Bureau, only 783 children out of 19,696 to whom certificates were issued, or less than 4 per cent, had attended or completed the eighth grade, though completion of the eighth grade is generally regarded as necessary to secure even the rudiments of an education.



Venezuela.—This South American republic is quite up to date in its methods of informing the public with reference to pests that carry disease. One of the circulars recently published warns against the fly, using illustrations that follow the fly from the outhouse past the garbage can and the spittoon to the baby and the dinner table, while another is directed to the ratproofing of granaries and storage places for fruits and other foods.

Canada.—The Canadian Red Cross Society has awarded to Miss Jean E. Browne of Saskatchewan a scholarship of \$1500 in public health nursing to be held for one year at the University of London, England. This and similar scholarships in other lands are one of the first fruits of the League of Nations. Miss Browne who goes as the representative of Canada, is an honor graduate of the Toronto Normal School and the General Hospital Training School for Nurses in the same city. In 1911 she organized the health work of the Regina public schools in Saskatchewan and since 1917 has been Director of School Hygiene for the Department of Education of that province.



California.—California's highways are now marked by a new feature, the brilliant symbol of the American Red Cross showing plainly above first aid kits for those injured in accidents. Chapters in the foothill cities of Southern California have chosen intersections and dangerous stretches of roadway where accidents have been most frequent as the best locations for the first aid equipment.



Colorado.—The University of Colorado in coöperation with the Colorado Fuel and Iron Co. during the school year of 1919-20 conducted two courses of four months each in public health nursing at the hospital of the Minnequa steel works with field experience in Pueblo and the near-by mining camps. The third course is under way, having begun September 20, and applicants were required to have come from accredited schools of nursing with the certificate of graduation, with limited numbers from senior classes of such schools. The courses are given by members of the University faculty and by other well known physicians and surgeons.



Georgia.—Dr. M. A. Fort of Grand Bay, Ala., has been elected Commissioner of Health of Brooks County at Quitman, Ga.

Dr. J. D. Applewhite has resigned as Commissioner of Health of Lowndes County and has been elected Commissioner of Health of Clark County at Athens.

Dr. Eugene O. Chimene has been elected

temporary Commissioner of Health of Floyd County at Rome.

Dr. C. C. Applewhite, P. A. Surgeon U. S. Public Health Service, has been detailed to the University of Georgia for the purpose of establishing the School of Public Health and Hygiene with the medical department at Augusta.

Twenty-five counties have adopted the Ellis Health Law.



Illinois.—A school of Diagnosis of Tuberculosis for acting assistant surgeons and local examiners engaged in the care of sick and wounded soldiers, has been established by the U. S. Public Health Service at Springfield. The school is conducted through the coöperation of the State Department of Public Health, the Illinois Tuberculosis Association, the Springfield Tuberculosis Dispensary and the Palmer Tuberculosis Sanatoria. Dr. George Thos. Palmer, Chief of the Division of Tuberculosis of the State Department of Public Health, is Director of the school. Courses covering a period of seven days of three sessions each, with classes limited to ten Service men will be given every other week till the end of autumn.

Through the coöperation of the State Department of Public Health, the State Department of Public Welfare, and the Illinois Society for the Prevention of Blindness, clinics for the diagnosis and treatment of trachoma have been established at Mount Vernon, Harrisburg, and Benton. These clinics are under the general supervision of Dr. E. V. L. Brown, representing the Illinois Society for the Prevention of Blindness.

The Better Babies Conference conducted by the State Department of Health has become one of the important features of the annual Illinois State Fair. This Conference has grown from a small beginning to the place where it now occupies practically the entire second floor of the Exposition Building. Last year 650 infants were entered for examination. It serves as a rallying ground for persons from all parts of the state interested in child welfare, and is responsible for the inspiration and development of scores of local child welfare movements.

Mr. Harry F. Ferguson has been ap-

pointed Acting Chief of the Division of Sanitary Engineering of the State Department of Public Health to succeed Paul Hansen, resigned. Mr. Hansen will engage in professional sanitary engineering in Chicago.

Mr. Baxter K. Richardson has been appointed Acting Chief of the Division of Surveys and Rural Hygiene of the State Department of Public Health to fill the place of Paul L. Skoog, who has been granted a year's leave of absence.

Dr. Thomas G. Hull has been appointed Acting Chief of the Division of Diagnostic Laboratories of the State Department of Public Health to succeed Martin DuPray, who retired from public service to conduct a private diagnostic laboratory.



Maine.—Dr. George Holden Coombs of Waldoboro, has been appointed Director of the Division of Venereal Disease in place of Dr. H. E. Hitchcock, resigned. The division is maintained jointly by the State Department of Health and the U. S. Public Health Service and has been in existence about two years.

The courts in Maine have held the fly to be a nuisance. An opinion given by Justice Spear of the Maine Supreme Court affirms this. A guest at a hotel left with his family on account of the flies which infested the dining room near his table, thereby breaking a two weeks' contract. The hotel proprietor sued him and recovered, but on an appeal to the higher court, Justice Spear rendered an opinion and granted a new trial. The keynote of the opinion is contained in this quotation from it:

"The real issue involves but a single question of fact; was the defendant justified in leaving the hotel on account of the fault of the plaintiff in allowing flies to collect at the defendant's table in such numbers as to become insanitary and repulsive? We think he was. It is a matter of common knowledge that the house fly has come to be regarded by enlightened understanding, not only as one of the most annoying and repulsive of insects, but as one of the most dangerous in its capacity to gather, carry and disseminate the germs of disease. He is the meanest of all scavengers. He delights in reveling in all kinds of filth. Of

were represented in the essays. The prize was awarded to Miss Rachel Grimsley of Jacksonville, Onslow county. A young man, Bernard McDuffie, was in the second place.

The State Board regards the contest as one of the most valuable pieces of educational work that it has accomplished. It extended over several months, maintaining interest and attention during this time, and incidentally about 100,000 pieces of literature were distributed. The counties offered prizes as well as the state one. The requirements made it necessary for the children to make a study of the conditions that induce and affect malaria, and the parents were, of course, drawn into the study. The contest touched those parts of the state that are most affected by malaria, and cannot fail to have important beneficial results.

Anti-malaria work is conducted in North Carolina by the State Board of Health in coöperation with the U. S. Public Health Service in a number of districts, among them, Goldsboro, Tarboro, Farmington and Wilmington.

The present season has been characterized in North Carolina by a number of sharp outbreaks of typhoid fever. Examples of three, five and even six cases in the same family are used to impress on the people the infectiousness of the disease, illustrating how whole families may contract the malady. The general situation in the state is very much improved, the mortality being in 1919 only about one-half that of 1914. Vaccination campaigns are now under way in eight or ten counties.

North Carolina is conducting a very active campaign against venereal disease under the direction of Dr. Millard Knowlton, Regional Consultant, U. S. P. H. S. The physicians are given no opportunity to remain ignorant of the laws and regulations. Copious literature is circulated among them with very definite instructions, and the responsibilities of the doctor are clearly set forth. In this state the decision as to whether a case shall be reported by name and address rests with the physician. He is the one who can best determine whether the case is one which should be cared for by the health authorities. By this procedure the authorities are relieved of the necessity of investigating every case, a

duty that would follow if all cases were reported by name.

+

Ohio.—The Ohio Society for the Prevention of Tuberculosis at its meeting in May assumed a broader field, changed its name to Ohio Public Health Association, and amended its charter and elected officers, among whom are: President, Dr. C. B. Bliss of Sandusky; Treasurer, Mr. Theo. S. Huntington of Columbus, and Secretary, Dr. Robert G. Paterson of Columbus. One of the objects of the organized association is to foster the establishment of local public health leagues in each county in the state and local anti-tuberculosis societies upon which to build these leagues. Summit County Red Cross Chapter was the first to affiliate and it will be the agent of the state association in its county. The Dayton society met in July to discuss the formation of a Montgomery County Public Health League, the subject being still under consideration to be acted upon in September.

The Association has issued a hand book giving the details of its organization, has secured a professional publicity and educational director of experience, Mr. E. W. Baird of Columbus, and has under way a modern health crusade and the Christmas stamp campaign.

As a part of a Peace Time Program the Cincinnati Chapter, American Red Cross, is establishing a permanent Bureau of Information. This Bureau is to be a collection of material on social work, health information, psychiatric service, disaster relief, community service and reference files of Red Cross activities.

+

Tennessee.—A course in Public Health Nursing has been established at George Peabody College, Nashville. Three months will be devoted to work on the campus, which includes economic subjects, community and individual problems, rural institutions, home management and practical English for public workers. Theoretical work will be followed by three months' field work in the city of Nashville and rural communities in various parts of the state.

Virginia.—Dental work for children is now being prosecuted in various parts of the state. No less than five counties have men equipped for the work, some with portable outfits so as to reach the more isolated districts, while in others central clinics have been established to which the children come in large numbers. Arlington and Fairfax counties have whole-time dentists who will continue the work throughout the year, the former making a charge of \$1.50 for each child. These clinics have penetrated even into the country of the mountain people, to the intense delight of the health workers who have hitherto been without such aid. Meanwhile a dental survey is in progress under Dr. E. J. Applewhite of Newport News, and by the time the schools open in the fall the program will be pretty well determined. This in the end is intended to include every school child in the state. For the benefit of teachers, lectures in oral hygiene have been given throughout the state at the summer schools by a unit of the U. S. Public Health Service, headed by Lieutenant-Colonel Harry B. Butler, D. R. C.

Forty-four cases of tuberculosis in a clinic that examined 275 persons, 154 of whom were declared to be healthy, is the record for Augusta county recently. Of the tuberculates, 23 were active cases, two of these advanced, with 21 arrested cases and six suspicious.

✦

Wisconsin.—That Racine, Wis., realizes the importance and value of public health

work is evidenced by the coöperation of the City Council in granting appropriations to carry on this work and in otherwise strengthening and upholding the Health Department. The Council has just authorized the issuance of \$130,000 in bonds for the erection of a hospital for the care of communicable diseases.

As a result of a vaccination campaign instituted last fall in Racine, when 8,500 school children were successfully vaccinated, there has not been a case of smallpox among school children for the past nine months. In every instance written consent of the parents of the children was first received.

✦

Philippines.—Acting Director of Health, Dr. Vincente de Jesus, has appointed a Leprosy Investigation Committee to meet at Manila from time to time on call of the Chairman thereof, for the purpose of undertaking investigations in connection with the treatment of leprosy, according to the latest developments of scientific research. The personnel of the committee is the following: Dr. José P. Bantug, Philippine Health Service, Chairman; Dr. H. W. Wade, University of the Philippines, Pathologist and Bureau of Science; Dr. Liborio Gomez, Bureau of Science, Bacteriologist; Dr. Daniel de la Paz, University of the Philippines, Pharmacologist; Dr. Granville A. Perkins, Bureau of Science, Chemist, and Dr. Proceso Gabriel, Philippine Health Service, and Dr. Luis Guerrero, University of the Philippines, Clinicians.



RELIEF FOR AUSTRIAN PHYSICIANS

In an appeal for relief funds, the American Relief Committee for Sufferers in Austria (261 Madison Ave., New York City) makes a special plea in favor of Austrian physicians. Vienna, whose great schools of medicine and surgery have for three centuries attracted the students of all nations, is today battling for its very existence. Physicians are among those who suffer acutely from the great scarcity of food. Their incomes have been reduced to almost nothing by the depreciation of money, they can not do manual labor and the scanty government ration is wholly inadequate. They are obliged to sink their pride and appeal for help. At the same time they need strength to combat the ills of the people, an undernourished population. The committee guarantees that every dollar contributed will be given to the physicians, administration costs being defrayed from other funds.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Francis H. Slack, M. D., and Mr. James M. Strang.

Method for fixing films of Human Blood Cells during the ameboid movement of Leucocytes and Thrombocytes.—A watch glass covered by a second watch glass, on the inside of which is laid a filter paper moistened with water, is placed in an incubator at a temperature of 38° C. On a well-cleaned cover slip is placed a drop of Deetjen's solution (0.75 percent sodium chloride, 0.5 percent magnesium sulphate, 0.01 percent sodium bicarbonate), previously heated to body temperature, to which is added a very small drop of blood from the finger. This cover slip is placed in the space between the watch glasses which is kept moist by the wet filter paper. After about 20 minutes in the incubator, the covering watch glass is quickly replaced by another one, on the inside of which a filter paper is placed moistened with a solution of 40 percent formaldehyde. In this manner the leucocytes and thrombocytes which have continued their ameboid movement while in the damp space are quickly fixed at body temperature. After about half an hour the cover slip is taken out of the incubator and the mixture of Deetjen's solution and blood is carefully run off so that part of the red blood corpuscles, leucocytes, and thrombocytes are left adhering to the cover slip. The film can now be stained and treated further in the usual way. The best results are obtained if the film is stained while still wet. —M. A. Van Henverden, M. D., *Jour. Expt. Med.*, Aug. 1, 1920.

+

Importance of Blood Groups in Complement Fixation Reactions.—Erythrocytes should always be obtained from a Group IV individual (Moss' classification) when preparing cell suspensions for complement fixation reactions in which an anti-human hemolytic system is used, since Group IV erythrocytes are never acted upon by the isohemolysins present in human serum nor by the natural anti-human hemolysin present. Human serums may contain hemolysins for Groups I, II or III

erythrocytes. An additional source of error, when human cell suspensions are made up at random, is introduced by the presence of anti-human hemolysin in guinea-pig serum selective for Group I and Group II human cells.—William C. Williams, *Jour. Expt. Med.*, Aug. 1, 1920.

+

Use of Tissue in Broth in the Production of Diphtheria toxin.—The authors draw the following conclusions: Diphtheria toxin can be produced regularly in broth to which pieces of sterile guinea-pig liver have been added. The medium must be inoculated immediately after the addition of the tissue. Broth prepared with certain American peptones gives satisfactory results when enriched with liver tissue. The most favorable initial reaction of the broth ranges from plus 0.3% to neutral to phenolphthalein. The broth at the time of testing should have a reaction ranging from P_{H} 8.0 to P_{H} 8.3, although a favorable reaction is not the only essential for toxin production. The addition of liver tissue reduces the necessary period of incubation. Strains of *B. diphtheria* other than Park-Williams No. 8 have produced a toxin of high potency by this method.—G. H. Robinson and P. D. Meader, *Jour. Inf. Dis.*, Aug., 1920.

+

Investigations and Experiences with the Sachs-Georgi Reaction for the Serum Diagnosis of Syphilis.—The great majority of cases examined by the Sachs-Georgi test give results concordant with those of the Wassermann. In 154 examinations, the author had divergent results only 15 times. In another set of 99 serums which were negative by the Wassermann, five were positive by flocculation. Three of these five were from patients having high fever from causes other than syphilis, in the other two syphilis was not excluded. The reaction is therefore held to be non-specific in certain cases of fever.—Munster. *Munchen. Med. Woch.* 1919, May 19, 505. *Abst. Bull. Inst. Past.* 1920, 18, 260.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Physiological Cost of Muscular Work.—

Waller demonstrated a method and apparatus for measuring the physiological cost of the various forms of mechanical work as done by a dock laborer, a painter, a carpenter and a tailor. The method consisted in measuring the CO₂ expired by the workers. The apparatus consists of three parts: (1) A collecting bag, with valve mouthpiece and tape to receive the expired air of the subject for, say, a minute or half a minute; (2) an analyser, to measure directly the percentage of CO₂ present in the expired air; and (3) a spirometer, to measure its volume in litres. The calorific value per cc. CO₂ is taken as equal to 5.55 calories. Waller demonstrated that at rest a man expires 60 calories per hour, while at work (walking at 3½ miles an hour) he expires 320 calories. The small value (60 calories per hour) represents the cost of bare life without work—that is, the basal cost. The procedure for tradesmen was to collect the expired air for a period of one minute every hour from each man during the six days of work. The amount of CO₂ and its calorific value were then computed. The physiological cost of work per hour in four workmen varied from 84 to 127 calories per hour; that for 4 compositors on the *British Medical Journal* being 101 to 105 calories per hour.—A. D. Waller, *Brit. Med. Jour.*, No. 3094, April 17, 1920, 537-538.

✦

Eyesight of Miners.—The (British) Illuminating and Engineering Society arranged a meeting on February 24th on the subject of eyesight of miners. Dr. T. Lister Llewellyn stated that lighting values in mines are extremely low owing to two factors: (1) The insufficiency of the light generated, and (2) the very feeble illumination that enters the eye of the miner owing to the high proportion of the light absorbed by the blackness of the coal face. In the safety lamp mines only one-fiftieth of the value of the illuminant reaches the coal face, and only one-five-hundredth

part, the eye of the miner. The electric-battery head-lamp proved to be the best in such mines. The economic loss to the country from miner's nystagmus is at least £1,000,000 per annum. Dr. H. S. Elworthy believed that much eye fatigue is due to the absence of color relief in the coal mine. Whitewashing the posts and roofs of the workings would give much relief. A rich yellow light with a tinge of red is the most comfortable light. Blue light which occurs in bad air and in certain mines where the coal face has a bluish tint is irritating and more nystagmus is found in such mines. Dr. J. S. Haldane doubted that the quality of the air of such mines had much to do with nystagmus. He considered the disease to be local neurasthenia induced by the fatigue of trying to see in darkness.

Mr. Armitage representing a Yorkshire colliery, stated that his company had installed 10,000 electric lamps of special type which has been followed by (1) reduction of nystagmus, (2) fewer accidents, and (3) quicker movement of the men. The whole cost of their use worked out at 1.29d. (2½ cents) per shift. Dr. F. Shufflebotham considered the affliction a general nervous disorder and not an eye disease. Mr. Elwood commented on the fact that there had been a great increase in the disease since the war. A number of other speakers thought that some other factor than light alone was the cause. Mr. Butler pointed out that it took some 10 to 25 years for the disease to develop and Dr. Hartford stated that miners who were free from the disease on enlistment had subsequently, under the stress of war, developed the symptoms, so that there was evidence of latency. Others substantiated this statement. At the conclusion Dr. Llewellyn called attention to an experiment which had been carried out before their eyes: during the meeting their oil lamps had burned out but the electric lamps were going as well as ever.—*Brit. Med. Jour.*, No. 3088, March 6, 1920, 327-328.

Does It Pay to Employ an Industrial Nurse and What Should Be Her Qualifications?—"Yes, because:

1. She gives first aid in case of injury, thereby preventing infection and shortening the period of disability.

2. She cares for minor ailments, thereby enabling the employees to continue work.

3. She is on the alert to prevent the introduction and spread of contagious diseases through the plant.

4. She prevents illness by giving instruction in ways of keeping well.

5. She advises regarding correction of physical defects.

6. She visits and arranges for the care of those absent because of illness, thereby enabling an earlier return to work. She helps in case of family illness or trouble, thereby relieving the mind of the worried employee and enabling him to give his undivided attention to his work.

7. She teaches the rules of hygiene and sanitation. She advocates suitable precautions in the dangerous trades.

8. She is at all times a friend in need and interprets to the employee the plans of the employer for the establishment of various forms of industrial betterment."

"She should have a personality which gains and holds confidence, quick and sound judgment, tact and optimism. In addition to being a registered nurse, she should, if possible, have had a post-graduate course in Public Health Nursing. Such a course insures knowledge of the preventive side of her work, which counts so largely in keeping employees well and on their jobs."—*Modern Hospital*, February, 1920, p. 160.



Conditions Affecting Health in the Millinery Industry.—This report is a fairly complete discussion covering the materials and activities entering into millinery manufacture including a list of poisonous substances, kinds of machinery, kinds of goods and the reports of industrial inspectors made in connection with a sanitary overhauling of millinery establishments in New York City. Among poisons used are to be noted wood alcohol, arsenic and white lead, as well as benzene, benzol, turpentine, anilin dyes and anilin. The great irregularity of hours of employment, the surreptitious employment of

children, and the large number of foreigners are special features for health consideration.—Hubbard and Kefauver, *Bulletin of New York City Dept. of Health*, April, 1920, Vol. 10, No. 4, 82-97.



Tuberculosis From an Industrial Viewpoint.—Dr. Brownlee divides cases of tuberculosis into three classes: The young adult (Y. A.), the middle-aged (M. A.), and the old-aged (O. A.). The Y. A. and O. A. cases are acute while the M. A.'s are chronic and this group is subject to environmental conditions and is eminently curable. Y. A. and O. A. types are far more difficult propositions. Y. A. phthisis is principally a racial and family disability and is affected by movements of population whereas M. A. phthisis being a hygienic and physical strain disease is principally affected by hygienic conditions of work and feeding. The M. A. group is essentially one of individual resistance to environmental conditions and hence can be controlled by controlling those conditions.—Henry A. Ellis, *Lancet*, No. 5053, July 3, 1920, 44-45.



Chronic Zinc Poisoning; Does It Exist?—Seiffert, who studied zinc smelting, concludes that lead is not so important among zinc smelters as a poison as is commonly supposed. The damage due to zinc is underestimated. Zinc dust is swallowed, passes into the gastro-intestinal tract and gradually produces illness. The worst forms are the dusts of zinc blende (ZnS) and calamine ($ZnCO_3$) which contain large amounts of $ZnSO_4$ and $ZnCO_3$. The symptoms are attacks of colic, vomiting and diarrhea. Chronic zinc poisoning in these workmen cannot be denied, in fact is the chief cause of occupational disease in that industry. Lead is only of secondary interest. (The abstractor who has studied this question of zinc poisoning rather extensively believes that such symptoms are hardly to be construed as chronic constitutional zinc poisoning but that they are probably due to the local and irritative effects of continual ingestion of zinc salts perhaps changed to zinc chloride in the stomach, with the usual irritative or semi-caustic local action.)—Seiffert, *Off. Gsdhtsblge*, III, 44-67, 85-98, 116-143.

PUBLIC HEALTH NOTES

Heat-Stroke. Under the title of "Heat Hyperpyrexia" two important papers have been published,—the clinical aspect by Dr. W. H. Willeox, lately consulting physician to the Mesopotamian Expeditionary Force, and the physiological aspect by Leonard Hill, Director of the Department of Applied Physiology, Medical Research Committee, with some valuable comments later by K. G. Hearne and Maj.-Gen. (Ret.) Wm. Pike. When temperature reached 110° F. in the shade heat-stroke made its appearance and the number of cases increased with increase in temperature. A temperature of 120° F., in spite of all precaution induced a large number of heat-stroke cases. The effect of heat was undoubtedly cumulative in action since it was the succession of several hot days which was dangerous and a man who had been exposed might develop the attack in the night or early morning after the atmospheric temperature had fallen. High humidity produced more cases. Heat-stroke occurred especially in men past 40 years of age in whom it was also more severe. Stagnation of air, the degrees of which were estimated by Dr. Hill's kata-thermometer, was directly responsible as a factor. Failing to drink enough water, imbibing of alcohol, exertion during the heat of the day, absence of a protective helmet or of umbrellas, as well as predisposing diseases with fevers such as malaria, were also direct factors. There are four types of disease from exposure to heat: (1) Heat exhaustion (mild type) with weakness, fainting rapid pulse, slight fever or subnormal temperature and small mortality, (2) gastric type with suffused face, restlessness, marked nausea and occasional vomiting and absent mouth temperature. The pulse will be normal for several days, but the rectal temperature often shows a rise of about two degrees; the knee-jerks were absent. This is a dangerous type and after several days suddenly develops fatal heat hyperpyrexia. (3) Choleraic or gastro-intestinal type. Here the onset is sudden with collapse, slight fever, vomiting, diarrhea, cramps in abdomen and extremities; mortality is high. (4) Heat hyperpyrexia. This is the common type (72½ of the severe

cases). The onset is often sudden with temperature reaching 110° F. and with rapid loss of consciousness; the onset may, however, be more gradual with frequent urination, a characteristic early symptom after which the temperature mounts rapidly. The treatment for the first type requires rest, keeping cool and aperient medicine. The gastric type requires free purgation, great care in protection from heat, large doses of sodium bicarbonate with cold rectal enemas of the same salt. The choleraic type requires normal saline subcutaneously the cardiac stimulants in addition to the protection from heat. The fourth type demands immediate stripping of the patient and constant application of a spray of cold water or constant rubbing of ice until the rectal temperature comes down to 102° F., the patient being under a fan during the process. Convulsions were treated by venesection, 10 to 20 ounces of blood being withdrawn. Respiratory failure was treated by artificial respiration and oxygen. Morphine and chloroform (inhalations) were inferior to venesection. Leonard Hill declares that so long as the body is exposed to cooling breeze, the exposure to sun cannot produce sun-stroke. The heating effect of protein-rich food must be avoided. A wet-bulb temperature of 80° F. may be the limit for muscular work. Breathing hot air may produce exhaustion even when the skin is exposed to a cool atmosphere. So long as sweating remains active and there is a breeze there is no danger of heat-stroke. Heavy clothing on soldiers marching in close column on a calm day are prime factors. One treatment to apply immediately when sweating ceases in a man, is to start artificial sweating by means of a water spray and fan. Persons about to suffer heat-stroke can be picked out by their dry skins. Those who cease to sweat complain of any breeze present. Maj.-Gen. Miles says that two points always precede an attack of heat hyperpyrexia, namely, frequency of urination and absence of sweating. These facts were pointed out in his lecture 40 years ago by Prof. McLean at Netley.—*Brit. Med. Jr.*, No. 3090, March 20, 1920, 392-397, and No. 3093, April 10, 1920, 521.

SPECIAL NOTICE

Public Health Authorities

Bubonic Plague Is Carried by Rats —Kill the Rats!

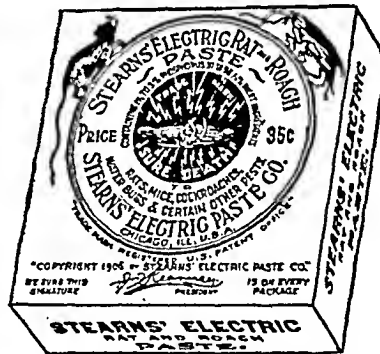
An ounce of prevention may save many lives from the dread scourge.

You owe it to your family and community to co-operate in the extermination of rats and disease-carrying pests. **PREVENT QUARANTINE!** Protect your premises today—tonight—against these dangerous pests by using **STEARNS' PASTE**. It's quick, sure, and saves time, money and effort.

Just put **STEARNS' PASTE**, tonight, on any food the pests eat. Tomorrow you should find their dead bodies **out in the open.**

STEARNS' PASTE makes them hunt fresh air and water.

Get the larger package for economy. Ask your neighbors to co-operate.
TWO SIZES:
35c and \$1.50.



Ready for use Better than traps
"Money back if it fails"

Always use

STEARNS' ELECTRIC PASTE

When an Exterminator is wanted

2 oz. or 35c size packed 12 dozen in case
15 " " \$1.50 " " 1 " " "

In each package is a circular of directions in 15 languages
U. S. Government Authorities have used the goods successfully
ORDER FROM wholesale or retail druggists anywhere

STEARNS' ELECTRIC PASTE CO., CHICAGO, ILL. U. S. A.

Established 1878

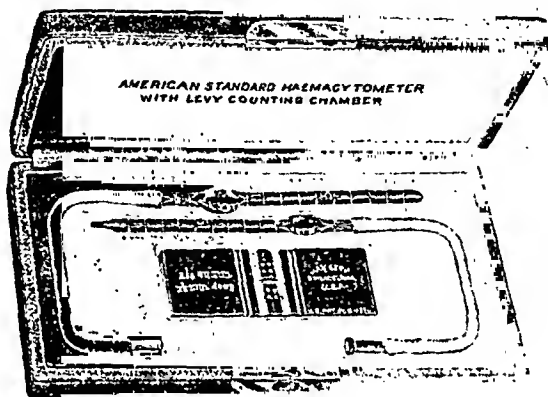
Incorporated 1892

When writing to Advertisers, say you saw it in the JOURNAL

AMERICAN STANDARD HAEMACYTOMETERS

WITH LEVY COUNTING CHAMBER

The Levy Counting Chamber was announced in November, 1916, was patented January 31st, 1917 (U. S. Patent No. 1,214,331), and was awarded the Edward Longstreth Medal of Merit by the Franklin Institute, Philadelphia, December, 1917



No. 29983. American Standard Haemacytometer with Levy Counting Chamber with double Neubauer ruling

THE LEVY COUNTING CHAMBER was the first dependable Haemacytometer Counting Chamber made in the U. S. and continues to be superior in several important characteristics to any chamber yet made either in Europe or America.

It provides an increased visibility of ruling when the chamber is filled, unequalled by any ruling of European make, and a new method of construction of the parallel form of cell (first suggested by Bürker), which entirely avoids the cemented cell of the Thoma or Bürker construction with the attendant danger of separation from the slide.

The parallel or open form of chamber permits the filling of the ruled area on the cover glass by capillary attraction after the cover glass is in position on the slide, and provides a more uniform distribution of the corpuscles than is possible with the Thoma or circular form of counting chamber, which is entirely enclosed by the cover glass.

The dimensions of the ruling and the depth of the cell are guaranteed to be within the tolerances established by the Bureau of Standards and, when so ordered, Counting Chambers are furnished with Bureau of Standards certificate at an additional price.

29991. American Standard Haemacytometer, complete with Levy Counting Chamber with Neubauer ruling, with two pipettes, in leather case. \$15.00

29983. American Standard Haemacytometer, as above, but with Levy Counting Chamber with double Neubauer ruling..... 18.00

29990. Levy Counting Chamber, with single Neubauer ruling..... 7.00

29965. Levy Counting Chamber, with double Neubauer ruling..... 10.00

Prices subject to change without notice.

Copy of Supplement No. 53, "American Standard Haemacytometers" sent upon request

ARTHUR H. THOMAS COMPANY

WHOLESALE, RETAIL AND EXPORT MERCHANTS

LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE

PHILADELPHIA, U. S. A.



Good Ventilation is Essential to Public Health and Comfort

The question of Ventilating street cars is beginning to receive the attention which its importance to PUBLIC HEALTH and COMFORT DEMANDS. It is a recognized fact that practically all the "WINTER DISEASES" are merely the result of BAD AIR and that ADEQUATE VENTILATION is the only preventive remedy.

During the past six years UTILITY HONEY-COMB VENTILATORS have been installed on approximately 16,000 cars, and are being more universally used than all other ventilators, because they have proven far superior. In tests made in Chicago, New York City, Washington, D. C. and Cleveland, Ohio, in which were tried thirteen other car ventilators, the UTILITY HONEYCOMB VENTILATOR was found to possess the highest merit, and was given a 100% efficiency rating by the U. S. Railroad Administration, Committee on Standardization.

New Bulletin on Ventilation Mailed on Request.

Railway Utility Co.,

Mfrs. of Ventilators and Thermostatic Heat
Regulators for Steam Railway and street cars

151 W. 22nd St.
Chicago



NUTROSE



We are now prepared to accept orders for small quantities of NUTROSE for immediate delivery. This material is satisfactory for the preparation of bacteriological culture media.

NUTROSE has been unobtainable for some time and as our production is still limited, future requirements should be estimated in advance.

This is a typical example of our ability to furnish materials that are difficult to secure.

WRITE US FOR OUR NEW 432-PAGE CATALOG

CHICAGO

A. DAIGER & CO.

ILLINOIS

PUBLIC HEALTH CLIPPINGS

Keeping physically fit is the first rule to be observed in keeping well. Exercise is necessary to health.

One man in every three was rejected by draft boards for physical disability. A great many of these defects might have been eliminated and probably will be in the next generation.—*Conn. State Board of Health.*

+

Wrong Diagnosis

"I know a man that has been married thirty years and he spends all his evenings at home."

"That's what I call love."

"Oh, no; it's paralysis."—*The Doctor.*

+

The Danger

"I doctor myself by the aid of medical books."

"Yes, and some day you'll die of a misprint."—*Boston Transcript.*

+

Orthodox Doctrine

In every boy and girl we see
A future citizen to be:
And Uncle Sam and all the world
Is looking to our boy and girl.
Let's mould them strong and shape them true,

We'll do our best, dear folks, will you?

—*Montana State Board of Health.*

+

Held in Suspension

The teacher was examining the class in physiology.

"Mary, you tell us," she asked, "what is the function of the stomach?"

"The function of the stomach," the little girl answered, "is to hold up the petticoat."

—*Abbogams.*

+

Doing Your Bit

Make it a point to help conserve human health and prevent needless physical and mental suffering by helping reduce the number of avoidable accidents. Do you know that 75 per cent. of all accidents are avoidable? What are you doing in the way of prevention?—*Speller Journal*, Butte, Montana.

Accurate Instruments

Selected from
the Leading Makers of
the Country

For Your Fall Needs

We can deliver promptly

Spencer Microscopes
Spencer Microtomes
Bausch & Lomb Apparatus
Colorimeters
Haemoglobinometers
Autoclaves
Incubators
Sterilizers
Chemical Balances
Haemacytometers
Glassware

Chemicals and all apparatus necessary for the Laboratory and Institution.

Consult us before
purchasing

F. H. THOMAS COMPANY

New England's Leading Supply House
for Physicians, Surgeons and Hospitals

689-91 Boylston Street
BOSTON, MASS.

Spencer Supremacy

In Microtome Building

Is Shown In

**Rotary
Microtome
No. 820**

The only Rotary Microtome ever built with an **incline-plane feed**.

It completely overcomes the inaccuracies usually encountered in other Rotary Microtomes, due to the up-and-down movement of the object.

In this microtome the feed and the movement are **entirely independent**.

IT'S SUPREMACY

has gained for it an international reputation for perfection. It is in use in every important laboratory in America and in leading laboratories throughout the world.

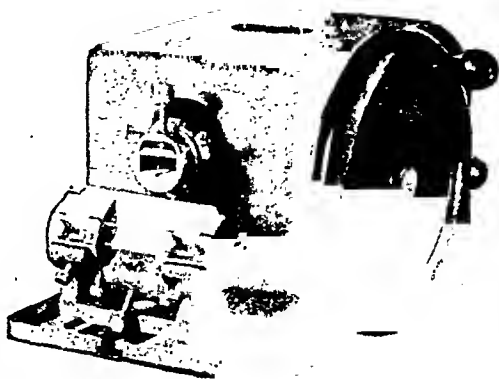
Prompt Deliveries Now

SPENCER LENS COMPANY

Manufacturers

Microscopes - Microtomes - Delineascopes

BUFFALO, N. Y.



Spencer Rotary Microtome No. 820, complete with knife., \$180.00



Everything
in Paper Sputum Cups

"To Be Certain—

Burn-It-All



BURNITOL MFG. CO.
Boston Chicago San Francisco

No. 5 COVERED SPUTUM CUP.
An all paper "Burnitol" Cup.

PUBLIC HEALTH CLIPPINGS—Continued

In Turn, Like Clothes

"So your brother has the measles, Johnny. When are you going to have them?"

"When my brother gets through with 'em, I suppose."—*Boston Transcript*.



Health Hints

Dress according to season, weather conditions and personal comfort.

Avoid persons having colds—many infections spread by contact.

If you violate nature's laws you eventually pay the penalty.—*Buffalo Sanitary Bulletin*.



Treat It Rough

"Doctor, a week ago you gave me something that you said was good for my dyspepsia."

"Yes."

"Well, now, suppose you give me something that's bad for it. I think it's been humored enough."



Protect the Children

"Next to the duty of doing everything possible for the soldiers at the front, there could be, it seems to me, no more patriotic duty than that of protecting the children."—

Woodrow Wilson.



A Breezy One

Doctor—Your wife needs a change of air.

Tightwad—Well, I'll get her an electric fan.



Change of Air

"What is your occupation?" asked the doctor as he felt the patient's pulse.

"I am a cabaret singer," was the reply.

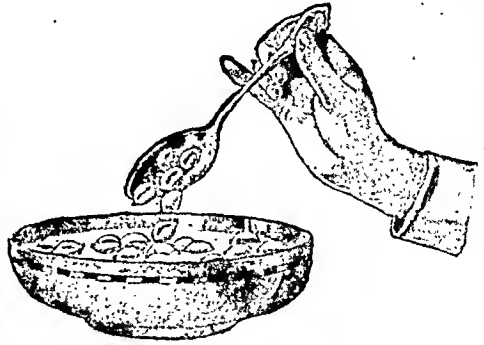
"Ah!" exclaimed the M. D. "What you need is a change of air. Suppose you try singing in a church choir."

—*Boston Transcript*.



In these days of advanced health measures, children should be taught to take plenty of outdoors physical exercise, but it should not be brutal in character. Their sports should tend to cultivate control, temperate thoughts and kindness.

—*Michigan Public Health*.



All Food Cells Exploded

Puffed Grains are steam-exploded. After an hour of fearful heat an explosion is caused in each food cell.

Thus all food cells are blasted for easy digestion. And the grains are puffed to bubbles eight times normal size.

Puffed Wheat and Puffed Rice are whole grains. Corn Puffs is corn hearts puffed.

These are the best-cooked cereals in existence. The flimsy texture and the nut-like taste make them most inviting.

Physicians, we believe, will consider Puffed Grains the ideal form of grain food.

**Puffed Wheat
Puffed Rice
Corn Puffs**

MORE FACTS
AND
FALLACIES
OF
COMPULSORY HEALTH
INSURANCE

By

FREDERICK L. HOFFMAN, LL.D.
Third Vice-President and Statistician
The Prudential Insurance Company of America

To Scientific
and
Medical Men
these addresses
will be
sent on request,
free of charge

Send for this free literature on

HEALTH INSURANCE

Facts and Fallacies of Compulsory Health Insurance (1917)
Public Health Progress Under Social Insurance (1917)
Autocracy and Paternalism versus Democracy and Liberty (1918)
Failure of German Compulsory Health Insurance: A War Revelation (1918)
Health Insurance and the Public (1919)
More Facts and Fallacies of Compulsory Health Insurance (1919)
National Health Insurance in Great Britain (1920)
Poor Law Aspects of National Health Insurance (1920)



The PRUDENTIAL INSURANCE COMPANY OF AMERICA

Incorporated under the laws of the State of New Jersey

FORREST F. DRYDEN, President

HOME OFFICE

NEWARK, NEW JERSEY

When writing to Advertisers, say you saw it in the JOURNAL

"In the last analysis, the value of personnel service will be measured by the employer in terms of increased production, and by the employee by the opportunities which are accorded to him for personal development both financial and spiritual. Both groups will measure such service by the yardstick, 'Does it pay?'"

THE HUMAN FACTOR IN INDUSTRY

By

LEE K. FRANKEL, PH. D.

Third Vice-President, Metropolitan Life Insurance Co.

and

ALEXANDER FLEISHER, PH. D.

Assistant Secretary, Metropolitan Life Insurance Co.

The First in its Field

Here is a concrete analysis of every method of securing better co-operation between employer and employee, together with a clear-cut statement of its actual value as determined by its records when put into operation.

THE HUMAN FACTOR IN INDUSTRY summarizes the results of the various methods of labor administration to date, suggests lines of future development, and embodies comprehensive interpretation of the purposes and motives which have brought personnel and service work into being, with an authoritative reply to the question—Is it worth while to employer and employee?

This new work describes in detail the value of scientific management, devoting space to the results obtained from such methods as profit-sharing, bonus plans, night schools, medical care, group insurance, industrial housing, employment management, etc.

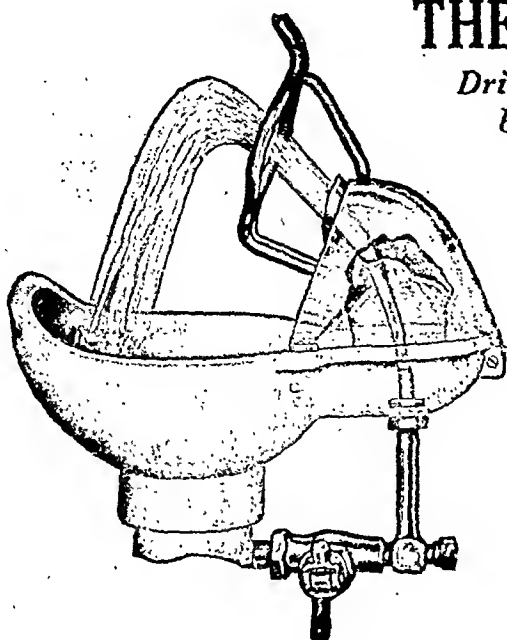
No one interested in these problems can afford to overlook this latest and most important contribution to the literature of the subject.

At your booksellers or direct, Price \$3.00

THE MACMILLAN COMPANY

Publishers

NEW YORK



THE PURO LIBERTY

*Drinking Fountain Cannot
become Contaminated!*

We court the fullest investigation of health department experts, bacteriologists, doctors and sanitary experts to prove to their own satisfaction that it is practically impossible to contaminate the water coming from the nozzle of the Puro. There is no way in which bacteria can come in contact with the stream in any ordinary usage of the fountain.

This Fountain can be furnished with wall bracket, pedestal or water cooler.

**PURO SANITARY DRINKING
FOUNTAIN CO.**

HAYDENVILLE, MASS., U. S. A.

BACTERIOLOGICAL STAINS

**Dry Stains Chemicals
Staining Solutions
Culture Media Reagents
Embedding Material**

For the purpose of diagnosing clinical cases where accuracy is of PARAMOUNT importance, laboratory technicians find our products indispensable on account of their UNIFORM QUALITY, SOLUBILITY, PURITY and SHARP STAINING EFFECTS.

Our complete price list will
be mailed free on request



Illinois Research Laboratories
now located in new quarters at
127 No. Dearborn Street, Chicago, Ill.

BORDEN'S MILK *is Safe*

Thirty Inspectors and three veterinarians in the Borden Service live in the country where our milk is produced, and devote their entire time to guarding the Borden Supply at its source. These men make it their business to know that the milk that goes into a Borden bottle is

**Safe, Clean, Wholesome
and from Healthy Cows**

In addition, Borden's Milk is Pasteurized in accordance with the requirements of the Local Department of Health. You take no chances with Borden's Milk. It is safe when delivered to you.

BORDEN'S

Farm Products Company, Inc.

Phone, Franklin 3110

136 W. Lake Street

CHICAGO, ILLINOIS

SCHOOL OF PUBLIC HEALTH

OF

Harvard University

AND THE

Massachusetts Institute of Technology

Eighth Year Begins September 27, 1920

Courses in preventive medicine, hygiene, sanitary engineering, laboratory procedures, public health practice and administration, vital statistics, etc., leading to a

CERTIFICATE IN PUBLIC HEALTH

C. P. H.

New courses in Industrial Hygiene in the Harvard Medical School are open to students in the School of Public Health.

For information and catalogues apply to

DIRECTOR, SCHOOL OF PUBLIC HEALTH

Harvard Medical School

240 Longwood Avenue
BOSTON, MASS.

Cloth Bound \$1.50
In Paper 60c

Standard Methods

For the

Examination of Water and Sewage

4th Edition [Revised 1920]

See Page XXXI

OHIO STATE UNIVERSITY

Offers

Courses in Public Health and Science Nursing

To meet the pressing demand for well-equipped women in the field of public health nursing, the Department of Health and Sanitation, College of Medicine, Ohio State University, is offering:

An eight months course in public health nursing for which a certificate is given to properly qualified graduate nurses. Equal time spent in class and field work. Classes begin September and February. Scholarships and loan funds will be arranged in a limited number of cases.

A four months course in public health nursing to graduate nurses and social workers, desiring public health training.

A course in science nursing which enables women to obtain a B. S. degree and complete nurse training in five years.

For detailed information write

MRS. NORMA SELBERT

Ohio State University

710 North Park Street, Columbus, Ohio

School of Public Hygiene of

The University of Pennsylvania

Eleventh year begins September 24, 1920. Courses are given in preventive medicine and epidemiology; industrial, personal, camp, school, meat and milk hygiene; sanitary engineering, entomology, parasitology, bacteriology, immunology and serology, sanitary chemistry, vital statistics.

The first year of the course is devoted to intensive laboratory instruction with didactic teaching to amplify and coordinate the laboratory work. The second year of the course is devoted to field work in public health administration and in the management of special hospitals and public health laboratories.

The courses are arranged for students preparing for the Dr. P. H. degree, and for the Ph. D. degree in public hygiene.

For announcement and further information address the

Director, School of Public Hygiene

University of Pennsylvania

Philadelphia, Pa.



**Before You
Drink
Think**

Boston Drinking Cup Co.

1000 Washington St.

BOSTON

MASS.

Teach the Necessary Laws of Health by the VISUAL METHOD

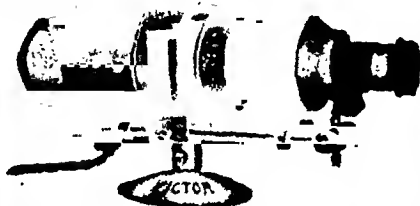
Progress will quickly be made toward the eradication of all diseases by visualizing the causes.

Proclaim warfare against the baffling germs of disease and

VISUALIZE Health Lectures

by use of the

VICTOR Portable Stereopticon



and VICTOR Patented Featherweight Slides

Special slide lecture set on Tuberculosis.
Slides made from any copy.

Catalogs Mailed Upon Request

Victor Animatograph Company
(Incorporated)

225 Victor Bldg.

Davenport, Iowa

ROUT THE RAT AND PREVENT TYPHUS

"THE RAT MENACE"

A MOTION PICTURE showing the great harm done by the rat. Also shows practical means of exterminating this pest.

One of the best means of educating the public to a realization of the rat menace.

*Every Health Officer Should Have
This Picture*

Write for Bulletin

National Motion Pictures Company

Manufacturers and Distributors

Motion Picture Films, Slides and Machines

EDUCATIONAL FILMS A SPECIALTY

Indianapolis, Indiana

Live Lantern Slides for Health Lectures

A picture tells more at a glance than a hundred words of narrative, and its message is remembered far longer.

EDEXCO LANTERN SLIDES

will add force and entertainment to your Health Talks.

Our new list comprises over a thousand slides on School, Child, Baby and Mouth Hygiene; Flies, Mosquitoes, Milk and Tuberculosis.

Send a Postal Today

for our new list of slides—it is FREE for the asking.

**EDUCATIONAL
EXHIBITION**

331 Custom House St., Providence, R. I.

PRICE REDUCTION

IN

Standard Methods

FOR THE

ANALYSIS OF WATER AND SEWAGE

By printing in larger quantities and by substituting a flexible paper cover for the expensive cloth cover, we are able to cut the price 50 per cent on the 4th edition of Standard Methods.

The 4th edition (revised, 1920) will contain new matter upon the following subjects together with minor changes:

Phenol-Red Method of Hydrogen-Ion Concentration
Carbohydrate Content of Media
The Use of Endo Medium
Synthetic Medium for the Methyl-Red Test

Standard Methods represent the consensus of opinion of American analysts concerning the best methods for the analysis of water and sewage, both chemical and bacteriological.

Price, with water-proof cloth cover. \$1.25, (as heretofore).

New price, heavy paper cover.....\$0.60
(Postage is prepaid when cash is sent with order)

ORDER FROM

**American Public Health
Association**

169 Massachusetts Avenue
BOSTON 17, MASS.

TEAR OUT AND MAIL THIS COUPON

A. P. H. A.,
169 Mass. Ave.
Boston 17, Mass.

Send me Standard Methods for the Examination of Water and Sewage.

....Heavy paper cover, \$0.60

....Waterproof cloth.....\$1.25

I enclose \$
(Your check or postage will do)

Name.....

Address.....

City.....

**The
Management
of an
Infant's Diet.**

In extreme emaciation, which is a characteristic symptom of conditions commonly known as

Malnutrition, Marasmus or Atrophy

it is difficult to give fat in sufficient amounts to satisfy the nutritive needs; therefore, it is necessary to meet this emergency by substituting some other energy-giving food element. Carbohydrates in the form of maltose and dextrins in the proportion that is found in

MELLIN'S FOOD

are especially adapted to the requirements, for such carbohydrates are readily assimilated and at once furnish heat and energy so greatly needed by these poorly nourished infants.

The method of preparing the diet and suggestions for meeting individual conditions sent to physicians upon request.

MELLIN'S FOOD COMPANY,

BOSTON, MASS.

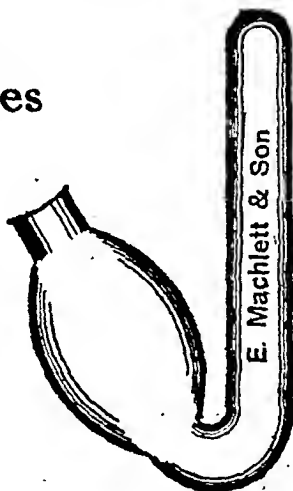
Fermentation Tubes

Improved Type

Straight Sided
Special Graduated

Pipettes

For Bacteriological
Milk Examinations



Chemical Apparatus

Special Apparatus

made from

Drawings

E. MACHLETT & SON

153 East 84th Street

NEW YORK CITY

Directory of Sanitary Engineers, Laboratories, Educational Courses and Health Service

METCALF & EDDY

Leonard Metcalf Harrison P. Eddy
Charles W. Sherman Frank A. Marston
Almon L. Faies
CONSULTING ENGINEERS
WATER SUPPLY and SEWERAGE
BOSTON, MASS. 14 Beacon Street

WESTON & SAMPSON

Robert Spurr Weston G. A. Sampson
Consulting Engineers for Water Supply, Water
Purification, Sewerage, Disposal of Sewage and
Municipal and Factory Wastes; Operation of
Purification Plants and Sanitary Analyses.
14 Beacon St., Boston, Mass.

ESTABLISHED 1848

BENDINER & SCHLESINGER

Analytical Laboratory
FOOD, MILK, WATER, CHEMICALS
Pathological and Bacteriological Work a Special Feature
Third Ave. and 10th St., New York City

NICHOLAS S. HILL, JR. S. F. FERGUSON HILL AND FERGUSON

Consulting Engineers
Water Supply Sewage Disposal Hydraulic Developments
Reports, Investigations, Valuations, Rates, De-
sign Construction, Operation, Management.
Chemical and Biological Laboratories.
112 East 19th Street New York City

William C. Hoad Arthur J. Decker W. R. Drury

HOAD AND DECKER

Consulting Civil, Hydraulic and Sanitary Engineers
Water Supply, Water Purification, Sewerage,
Drainage, Disposal of Sewage and Industrial
Wastes, Sanitary Analyses, Examinations, Ap-
praisals and Reports.
ANN ARBOR, MICHIGAN.

FULLER & McCLINTOCK

George W. Fuller Jas. R. McClintock Jesse E. Giesey
Elmer G. Manahan Jas. C. Harding Wellington Donaldson
Myron E. Fuller Daniel C. Hayne Harvey P. Jones
Consulting Hydraulic Engineers and Sanitary Experts
Water Supply, Sewerage, Refuse Disposal, Investigation
of Epidemics, Valuations, Supervision of Construction
and Operation.
170 Broadway, New York City
Valentine Bldg., Toledo, Ohio.
Produce Exchange Bldg., Kansas City, Mo.

KEERL & CONKLIN

Hydraulic and Sanitary Engineers
Water Supply and Purification, Flood Relief, Land and
Anopheles Drainage, Sewerage and Sewage Disposal,
Treatment of Industrial Wastes, Investigations of
Water Pollution, Sanitary Chemical Analyses.
625-27 M. B. A. Bldg., Mason City, Iowa

THE BOSTON BIO-CHEMICAL LABORATORY

SAMUEL C. PRESCOTT, Director
Consulting Experts, Bacteriological and Chemical
Analyses; Water, Sewage, Milk Supply and,
Dairy Inspection. Food Manufacture and Pres-
ervation. Disinfectants. Fermentation. Special
Investigations.
585 Boylston Street, Boston

PEASE LABORATORIES, Inc.

Successors to
LEDERLE LABORATORIES
39 West 38th Street, New York City
HERBERT D. PEASE, M. D., Director
JOHN H. WRIGHT, M. S. PAUL FOETSCHKE, B. C.
Sanitary, Bacteriological and Chemical Investigations



CONSULTANT SERVICE

Campaign Management
Public Health, Hospital
Organization, Reorganization
ASSOCIATED SERVICE BUREAU
608 Renshaw Building
Pittsburgh, Pa.

N. J. STATE DEPARTMENT OF HEALTH—BUREAU OF CHILD HYGIENE

NURSES WANTED

MINIMUM SALARY.....\$1,200

Advancements in Salary Are Granted—

1. By Length of Service 2. Through Promotional Tests to higher Positions

Positions Vacant—

1. Child Hygiene Nurses.....\$1,200 2. District Supervisor of Midwives Dist-
3. Assistant Supr. of nurses... 1.700 rict Supr. of nurses\$1,500

Nurses who are acceptable to the Department will be required to sign a one
year's contract.

Address Applications to JULIUS LEVY, M.D., Bureau of Child Hygiene
State House, Trenton, N. J.

Hay Fever Prophylaxis

The uniform stability and antigenic activity of the product employed is of utmost importance

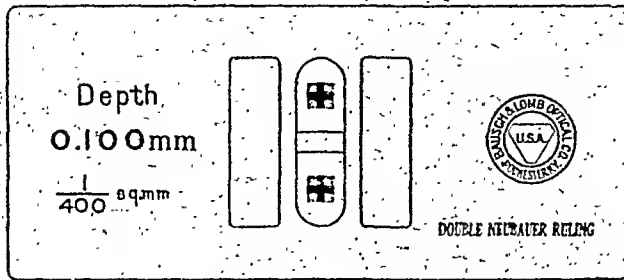
Pollen Antigen *Lederle*

is so prepared that its antigenic activity is accurately determined and so preserved that its stability is assured

Complete Data Upon Request

Lederle Antitoxin Laboratories
511 Fifth Avenue, New York.

Bausch & Lomb Haemacytometers



No. 3518 Double Neubauer Ruling

Haemacytometer, complete in case, consisting of:

Counting Chamber (Buerker type) with Double Neubauer ruling of precise accuracy and plain lines.

Mixing Pipette, 1:100 for red corpuscles.

Mixing Pipette, 1:10 for white corpuscles.

Cover Glasses, plane, polished, 20x26 mm; one each 0.4 mm and 0.6 mm.

Price, \$17.50

Every part of this Haemacytometer is subjected to exacting tests before leaving the factory, and is covered by our full guarantee as to accuracy, workmanship and material.

Bausch & Lomb Optical Co.

419 S. Paul St., Rochester, N. Y.

New York

Washington

Chicago

San Francisco

Leading American Makers of Microscopes, Photographic Lenses, Projection Apparatus (Balopticons), Ophthalmic Lenses and Instruments, Photomicrographic Apparatus, Range Finders and Gun Sights for Army and Navy, Searchlight Reflectors, Stereo-Prism Binoculars, Magnifiers and Other High Grade Optical Products.

Headquarters

—for—

Bacteriological and Chemical Laboratory Supplies

Our Bacteriological Catalog, Section 1, gives full details of Microscopes, Microtomes, and other Microscope Accessories, including Blood and Bacteria Counting Apparatus.

There is a detailed listing of the regular stands supplied by the Barseh & Lomb Company and the Spencer Lens Company, as we are New York representatives of both of these factories. We have all of the leading stands on display in our New York showroom. We place large orders with the factories many months ahead, and are able to make prompt shipment.

Section 1 also gives detailed listing of Blood Pressure Apparatus, Forceps, Dissecting Apparatus, Colorimeters, Urinary Apparatus, and Van Slyke Amino Nitrogen and CO₂ Apparatus.

Section 2 of the Bacteriological Catalog deals with Incubators, Sterilizers, Centrifuges, Water Stills, Jars, etc. There is a full description of the Standard Freas Automatically Controlled Electrically Heated Incubators, Sterilizers, and Water Baths. There is also a detailed listing of Sterilizing Autoclaves, International and other Centrifuges, Barnstead and Stokes Water Stills.

Write for Catalog and Bulletins, stating your requirements.

Visit Booth No. 58 at the Sixth National Exposition of Chemical Industries in Grand Central Palace the week of September 20th; also visit our Showroom when in New York.

Eimer & Amend

Founded 1851

NEW YORK CITY:
Third Ave., 18th to 19th St.

PITTSBURGH OFFICE:
2011 Jenkins Arcade

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN
PUBLIC HEALTH ASSOCIATION

THE CENTRAL FEATURE THIS MONTH
IS THE

PLAGUE SYMPOSIUM FROM THE
SAN FRANCISCO MEETING

By Dr. Kellogg—Dr. Williams—Dr. Simpson
Historical—Diagnostic—Remedial

Published monthly on the 20th by the American Public
Health Association at
124 W. Polk Street, Chicago, Ill.

ADDRESS EDITORIAL MATTER TO
169 MASSACHUSETTS AVE.
BOSTON, MASS.

Subscription Price, \$4.00 per Year. Single Copies, 50 cents.
A. P. H. A. Membership, Including Subscription, \$5.00 per year.

Entered as second class matter January 20, 1920, at the postoffice at Chicago, Illinois, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized February 28, 1920.

Laboratory Apparatus and Supplies

COMPLETE EQUIPMENT FOR BACTERIOLOGICAL AND PATHOLOGICAL LABORATORIES

Microscopes	Centrifuges (2-tube, 4-tube and 8-tube combination heads.)	Petri Dishes
Microscope Lamps		Culture Tubes
Mechanical Stages		Chemical Tubes
Dark Field Illuminators	Centrifuge Tubes	Flasks (Culture, filter, Erlen- meyer, boiling, volu- metric.)
Haemacytometers	Babcock Bottles	Cylinders
Stage Micrometers	Babcock Centrifuges	Graduates
Eye Piece Micrometers	Sputum Shakers	Pipettes (Plain and graduated)
Micro Slides	Pipette Boxes	Porcelain Ware
Micro Cover Glasses	Petri Dish Boxes	Burettes
Hang Drop Slides	Wassermann Racks	Burette Stands, Clamps, etc.
Microscopical Stains (Dry and solution)	Water Baths	Filter Paper
Lens Paper	Autoclaves	Bacto Culture Media
Cedar Oil	Incubators	
Xylol	Hot Air Sterilizers	
Nichrome and Platinum Loops	Drying Ovens	
	Test Tube Baskets	
	Test Tube Racks	

Chemicals and Reagents

The above is a list of some of the articles which we carry in stock ready for immediate shipment.

ITEMIZED QUOTATIONS GLADLY RENDERED UPON
REQUEST

We specialize in equipment for Board of Health Laboratories and solicit your request for information along these lines.

E. F. MAHADY COMPANY
671 Boylston Street BOSTON, MASS.

AMERICAN PUBLIC HEALTH ASSOCIATION

BOARD OF DIRECTORS, 1920-1921

OFFICERS

President, M. P. Ravenel, M. D., Columbia, Mo.
Vice-Presidents, T. B. Beatty, M. D., Salt Lake City, Utah.
Louis I. Dublin, Ph. D., New York City.
Wm. C. Hassler, M. D., San Francisco, Cal.
Treasurer, Roger I. Lee, M. D., Cambridge, Mass.
Secretary, A. W. Hedrich, C. P. H., Boston, Mass.

EXECUTIVE COMMITTEE

M. P. Ravenel, M. D., Columbia, Mo. (1921) Peter H. Bryce, M. D., Ottawa, Ont. (1922)
Roger I. Lee, M. D., Cambridge, Mass. (1921) Lee K. Frankel, Ph. D., New York City (1922)
A. W. Hedrich, C. P. H., Boston, Mass. (1921) W. S. Rankin, M. D., Raleigh, N. C. (1923)
W. A. Evans, M. D., Chicago, Ill. (1921) C. J. Hastings, M. D., Toronto, Ont. (1923)
A. J. McLaughlin, M. D., Washington, D. C. (1921)

DIRECTORS ELECTED BY THE ASSOCIATION

Directors whose terms expire in 1921

F. L. Hoffman, LL. D., Newark, N. J.
Oscar Dowling, M. D., New Orleans, La.
J. T. Black, M. D., New London, Conn.
G. H. Sumner, M. D., Des Moines, Iowa
A. J. McLaughlin, M. D., Washington, D. C.

Directors whose terms expire in 1922

M. P. Ravenel, M. D., Columbia, Mo.
Henry F. Vaughan, D. P. H., Detroit, Mich.
John A. Kappelman, M. D., Canton, Ohio
J. D. Robertson, M. D., Chicago, Ill.
Haven Emerson, M. D., New York City

Directors whose terms expire in 1923

Pres. R. L. Wilbur, Berkeley, Cal.
John A. Ferrell, M. D., New York City.
S. J. Crumbine, M. D., Topeka, Kan.
M. M. Seymour, M. D., Regina, Sask.
Charles J. Hatfield, M. D., New York City

PAST PRESIDENTS (Directors Ex-Officio)

Stephen Smith, M. D., New York City
Frederick Montizambert, M. D., Ottawa, Ont.
S. H. Durgin, M. D., Millbrook, Mass.
Peter H. Bryce, M. D., Ottawa, Ont.
Richard H. Lewis, M. D., Raleigh, N. C.
Gardner T. Swarts, M. D., Providence, R. I.
Charles O. Probst, M. D., Columbus, Ohio
Robert M. Simpson, M. D., Winnipeg, Man.
John N. Hurty, M. D., Indianapolis, Ind.
Rudolph Hering, D. Sc., New York City.
William C. Woodward, M. D., Boston, Mass.
Wm. T. Sedgwick, Sc. D., Cambridge, Mass.
John F. Anderson, M. D., New Brunswick, N. J.
W. A. Evans, M. D., Chicago, Ill.
Chas. J. Hastings, M. D., Toronto, Ont.
Lee K. Frankel, Ph. D., New York City
W. S. Rankin, M. D., Raleigh, N. C.

REPRESENTATIVES OF SECTIONS TO BOARD OF DIRECTORS

Laboratory, W. H. Kellogg, M. D., Berkeley, Cal.
Vital Statistics, Louis I. Dublin, Ph. D., New York City
Public Health Administration, E. C. Levy, M. D., Richmond, Va.
Sociological, Ira S. Wile, M. D., New York City.
Sanitary Engineering, Robert S. Weston, Boston, Mass.
Industrial Hygiene, J. W. Schereschewsky, M. D., Washington, D. C.
Food and Drugs, Prof. James O. Jordan, Boston, Mass.

The Board of Directors also includes representatives from affiliated state health organizations.

SECTION OFFICERS

Laboratory Section (Organized 1905)

Chairman, Roger G. Perkins, M. D., Cleveland, O.
V. Chairman, B. L. Arms, M. D., Jacksonville, Fla.
Secretary, A. P. Hitchens, M. D., Washington, D. C.

Vital Statistics Section (Organized 1908)

Chairman, Henry B. Hemenway, M. D., Springfield, Ill.
V. Chairman, R. W. Hall, M. D., Jackson, Miss.
Secretary, W. F. Petrie, Lansing, Mich.

Public Health Administration Section (Organized 1908)

Chairman, Francis G. Curtis, M. D., West Newton, Mass.
V. Chairman, H. F. Vaughan, D. P. H., Detroit, Mich.
Secretary, W. H. Kellogg, M. D., Berkeley, Cal.

Sociological Section (Organized 1911)

Chairman, W. H. Brown, M. D., Washington, D. C.
V. Chairman, Philip S. Platt, C. P. H., New Haven, Conn.
Secretary, R. Justin Miller, San Francisco, Cal.

Sanitary Engineering Section (Organized 1911)

Chairman, S. A. Greeley, Chicago, Ill.
V. Chairman, Theodore Horton, Albany, N. Y.
Secretary, E. D. Rich, Lansing, Mich.

Industrial Hygiene Section (Organized 1914)

Chairman, A. J. Lanza, M. D., Cleveland, O.
V. Chairman, Philip K. Brown, M. D., San Francisco, Cal.
Secretary, W. A. Sawyer, M. D., Rochester, N. Y.

Food and Drugs Section (Organized 1917)

Chairman, John P. Street, Indianapolis, Ind.
V. Chairman, R. E. Doolittle, Chicago, Ill.
Cor. Sec'y, C. H. Lawall, Philadelphia, Pa.

Secretary, Prof. James O. Jordan, Boston, Mass.



BACTO-PEPTONE

DIFCO STANDARDIZED

**The Original Standardized Peptone
for Bacteriology**

Bacto-Peptone is the original peptone designed to meet particularly the nutritional requirements of bacteria in culture.

It is the first peptone designed to meet the requirement of uniformity in its chemical and biological properties.

It is made in large quantities by expert workmen under rigid scientific check and control. Raw materials are approved only after assay.

Accurate records of each lot are kept throughout the manufacturing process, and only those lots which pass definite chemical and bacteriological tests are allowed to go into stock for distribution.

A definite requirement as to the H-ion concentration in solution was applied first to Bacto-Peptone.

It is standardized as to its Tryptophane content and supports vigorous Indol production within 24 hours after inoculation.

Bacto-Peptone has passed the experimental stage and has proved its absolute dependability for all nutritional requirements of Bacteriology.

Bacto-Peptone stands on its own merits and completely substantiates all claims made for it.

The additional equipment which we were forced to install in order to furnish the unprecedented quantities of Bacto-Peptone requisitioned for the U. S. and allied military establishments enables us to take care of all orders, irrespective of size, promptly and uniformly.

For more complete description send for Bulletin 20.

Carried in stock by the principal dealers in Scientific Supplies

DIGESTIVE FERMENTS COMPANY

DETROIT, MICHIGAN, U. S. A.

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 West Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Avenue, Boston, Mass.

Subscription price, \$4 per year. American Public Health Association membership, including subscription, \$5 per year.

NOVEMBER, 1920

CONTENTS

Vol. X, No. 11

Presidential Address at San Francisco.....	825
By W. S. Rankin, M. D.	
Present Status of Plague, with Historical Review.....	835
By W. H. Kellogg, M. D.	
Methods of Plague Control.....	845
By Friench Simpson, Surgeon, U. S. P. H. S.	
Diagnosis and Detection of Rodent Plague.....	851
By C. L. Williams, Passed Assistant Surgeon, U. S. P. H. S.	
Botulism	865
By Ernest C. Dickson, M. D.	
Comparison of the Bacterial Counts from Machine and Hand Washed Dishes and Their Significance.....	871
By Roy S. Dearstyne.	

Continued on Page VII

Excellent *Building* Food For Growing Children

(and for all ages)



The Original and Genuine

Horlick's Malted Milk fortifies active, growing young minds and bodies with highly efficient and inviting nourishment—properly balanced for building bone and flesh.

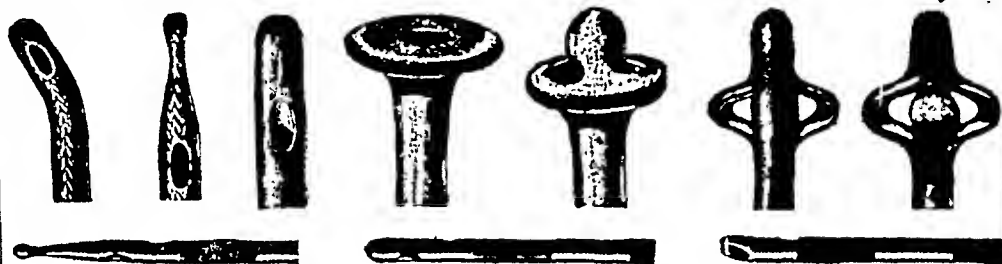
Its strengthening effect is of utmost benefit now during the strenuous school season.

Serve it to your children in place of tea or coffee. It aids digestion and adds zest to every meal. Provide it for their school luncheons and in the afternoon when tired from play.

**"HORLICK'S" IS AS GOOD FOR "GROWN-UPS"
AS FOR THE YOUNG—KEEP A JAR AT HOME**

Avoid Imitations

Mercier Retention Ureteral Urethral X-Ray



FRENCH CATHETERS AND BOUGIES

A large assortment of every type of catheters is constantly carried in stock. Orders filled same day they are received.



V. MUELLER & COMPANY

Makers of Instruments for the Specialist in every Branch of Surgery
1771-89 OGDEN AVE., CHICAGO, ILL.



RARE SUGARS

FOR

Public Health Departments

In association with several leading bacteriologists in America, our Research Department has been investigating the standards of purity for carbohydrates used in bacterial differentiations. Absolute purity is virtually required. *Pfanstiehl Sugars* are submitted to the most delicate scientific tests, are analyzed and guaranteed. They are used by the leading institutions of research in America. *Pfanstiehl Sugars* are the standard for bacteriology.

l-Arabinose
Dulcitol (Dulcitol)
d-Galactose
d-Glucose (Dextrose)
Glycogen
Inositol (Inositol)

Inulin
Invert Sugar
Lactose
d-Levulose from Inulin
Levulose, Syrupy
Maltose

d-Mannitol (Mannitol)
d-Mannose
Raffinose
Rhamnose
Sucrose
l-Xylose

Carried in Stock by the Leading Distributors

REQUEST PFANSTIEHL SUGARS

SPECIAL CHEMICALS COMPANY

DEVOTED TO THE CHEMICAL INDEPENDENCE OF AMERICA

HIGHLAND PARK, ILL.



When writing to Advertisers, say you saw it in the JOURNAL

Continued from Page V

Value of Brilliant-Green in Eliminating Errors Due to Anaërobes in the Presumptive Tests for B. Coli.....	874
By Theodore C. Muer and Robert L. Harris.	
Urgent Need for the Standardization of Laboratory Work.....	876
By Arthur Lederer, M. D., C. P. H.	
Editorials:	
Problem of the Rat.....	880
Varieties of City Health Officers.....	881
Books and Reports Reviewed.....	883
Association News:	
Health Employment Bureau.....	888
Newly Elected Officers.....	889
List of New Members.....	890
Stories from the Day's Work.....	892
From Distant Countries:	
Improved Handling of Foods in Brazil.....	893
Building Regulations in Venezuela.....	895
Ohio Public Health Association.....	897
Public Health Notes.....	899
Conventions, Conferences, Meetings.....	911
State Health Notes.....	912
Public Health Laboratory Notes.....	918
Industrial Hygiene and Occupational Disease.....	919

INDEX TO ADVERTISERS

BIOLOGICAL PRODUCTS		Page		
Bethlehem Laboratories		IX	Thomas Company, Arthur H.	XII
Harmer Laboratories		XIV	Thomas Company, F. H.	XXI
Illinois Research Laboratories.....		XXX	Will Corporation	XXVIII
Lederle Antitoxin Laboratories.....	XXXIV		LIQUID CHLORINE AND APPARATUS	
Squibb & Sons, E. R.....	XV		Wallace & Tiernau Co., Inc.	XI
FOOD PRODUCTS			POSITIONS WANTED	
Borden's Farm Products Company, Inc.	XXXI			888
Horlick's Malted Milk Co.....	V		PUBLIC HEALTH COURSES	
Mellin's Food Company.....	XXVIII		Harvard Medical School.....	XXII
Quaker Oats Company.....	XXIII		Ohio University	XXII
HELP WANTED	888, XXXIII		University of Pennsylvania.....	XXII
			Yale University	XXII
INSURANCE CO. SERVICE			SANITARY ENGINEERS	
TO HEALTH OFFICERS			Fuller & McClintock.....	XXXIII
Metropolitan Life Insurance Co...	XXVI		Hill and Ferguson.....	XXXIII
Prudential Insurance Company of America	XXVII		Hoad & Decker.....	XXXIII
			Keel & Conklin.....	XXXIII
LABORATORIES			Metcalf & Eddy.....	XXXIII
Abbott Laboratories	XXI		Weston & Sampson.....	XXXIII
Bendiner & Schlesinger.....	XXXIII		STANDARD HEALTH LITERATURE	
Boston Bio-chemical Laboratory...	XXXIII		Standard Methods of Water Analysis	XXIX
Pease Laboratories, Inc.	XXXIII		STEREOPTICONS AND MOTION PICTURES	
LABORATORY APPARATUS AND SUPPLIES			Educational Exhibition Co.	XXX
Bausch & Lomb Optical Co.....	XXXV		National Motion Picture Co.	XXX
Central Scientific Company.....	XVIII		Victor Animatograph Co.	XXX
Dalger & Co., A.....	VIII		DON'T OVERLOOK THESE	
Digestive Ferments Company.....	IV		American Telephone & Telegraph Company	XIX
Elmer & Amend.....	Back Cover		Associated Service Bureau.....	XXXIII
Greiner Company, Emil.....	XXIV		Boston Drinking Cup Co.	XXXI
International Equipment Company	XXIV		Burnitol Manufacturing Co.	XXV
E. Leltz, Inc.	VIII		Globe-Wernicke Co.	XXXI
Machlett & Sou, E.	II		Puro Sanitary Drinking Fountain Company	XXXII
Mahady Company, E. F.	II		Railway Utility Company.....	XVI
Mueller, V., & Co.	VI		Stearns' Electric Paste.....	X
Parke, Davis & Co.	XIII			
Sargent & Co., E. H.	XVII			
Special Chemical Company.....	VI			
Spencer Lens Company	XVI			

❖ NUTROSE ❖

We are now prepared to accept orders for small quantities of NUTROSE for immediate delivery. This material is satisfactory for the preparation of bacteriological culture media.

NUTROSE has been unobtainable for some time and as our production is still limited, future requirements should be estimated in advance.

This is a typical example of our ability to furnish materials that are difficult to secure.

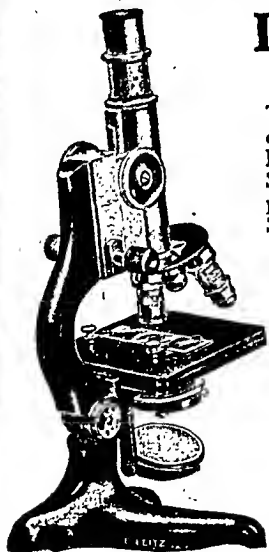
WRITE US FOR OUR NEW 432-PAGE CATALOG

CHICAGO **A. DAIGGER & CO.** ILLINOIS

Leitz Microscopes are the Standard of the World

The manufacture of Leitz Microscopes reaches back to 1840, the time when the Leitz Works were established

Leitz Laboratory Microscope "L-10"



This instrument is endowed with the same high "Leitz-Standard" of optical and mechanical workmanship as is recognized with Leitz Research Equipment.

Such a statement, the facts of which are substantiated daily, should prove convincing of the quality obtained with the purchase of Stand "L."

A Microscope of proper workmanship, under ordinary conditions of use, should fully last a lifetime. The Leitz Microscopes are offered with full guarantee to meet these requirements.

A Leitz Microscope is slightly higher in price than others; but it is the most economical one in the end.

Leitz Concentric Darkfield Condensers are the standard in leading laboratories of the world.

Microscope "L-10," fully equipped for laboratory work, with quick-acting screw substage, Abbe condenser and iris-diaphragm, triple nose piece, Objectives 16mm., 4mm., Oil Immersion 1.8mm., Eye Pieces 6 and 10X, in cabinet - - - \$145.00
Mechanical Stage for same - - - 33.50
Concentric Darkfield Condenser - - - 24.75

Write for Pamphlet No. B-1002

E. LEITZ, Inc., NEW YORK CITY

HYCLORITE

CONCENTRATED
SODIUM
HYPOCHLORITE

Exerts Solvent Action on Necrosed Tissue Unequalled by other Chlorine Antiseptics

THE VALUE of chlorine antiseptics has been shown to lie largely in their ability to dissolve pus, blood and plasma clots, and, by chemical combination of the chlorine with the proteins, to remove the necrosed tissue which forms a protection for bacteria.

In clinical tests Hyclorite has shown greater solvent action than other chlorine antiseptics.

It has also been proved to be less irritating in the dilutions commonly in use for irrigating and swabbing, due to its exceedingly low alkalinity. ($\frac{1}{6}$ of 1%.)

Hyclorite makes a correct Dakin in one minute

(*without need of testing*).
Just add water.

Its hypochlorite content is uniform and very high.
(Na OCl 4.05%.)

It possesses remarkable stability and thus may be kept for long periods without appreciable decrease in germicidal activity, or solvent power.

Accepted by A. M. A. (N. N. R.)

Write for Sample and Literature to

BETHLEHEM LABORATORIES, INC.
BETHLEHEM, PA.

Manufactured by
General Laboratories
Madison, Wis.

For
Bethlehem Laboratories, Inc.
Distributors

IMPORTANT NEWS ITEMS **RATS MUST BE KILLED**

To help prevent the spread of diseases from infected places.



KILL THEM TO-DAY

By Using
THE GENUINE

STEARNS' ELECTRIC PASTE

the guaranteed exterminator for Rats, Mice, Cockroaches, Ants and Waterbugs, the greatest known destroyers of food supplies and property. It creates a desire in these pests to run from the building for water and fresh air, dying outside in a few moments.

Ready for use. Money back if it fails. Better than traps.

Directions in 15 languages in every box.

Millions of boxes have been sold during the past 42 years.

2 oz. Box 35c, 15 oz. Box \$1.50. Should be enough to kill from 50 to 400 Rats.

U. S. Government for over Fifteen years have continued to buy
STEARNS' ELECTRIC RAT AND ROACH PASTE

To Departments of Health Everywhere:

Now is the time to recommend rat killing before these pests seek their winter quarters, and actual tests will prove to you that ***Stearns' Electric Paste*** is the most successful rat exterminator on the market, with no exception whatever.

We have a nation wide distribution among the wholesale druggists who purchased in September alone nearly 74,000 boxes.

Rats can easily be killed if the proper methods are adopted.

Stearns' Electric Paste Co.

CHICAGO, ILLINOIS

At Packing Plants and Food Manufacturing Establishments

"W & T" Chlorine Control Apparatus

is extensively used to sterilize all water used for washing or manufacturing purposes and thus eliminate a possible factor of contamination.

This is one of many industrial uses of W & T Apparatus.

Any water supply, from whatever source it may be obtained, can be made safe by W & T Apparatus and LIQUID CHLORINE.

Now sterilizing more than THREE BILLION GALLONS OF WATER EVERY DAY.

Let us send interesting Literature

Wallace & Tiernan Co., Inc.

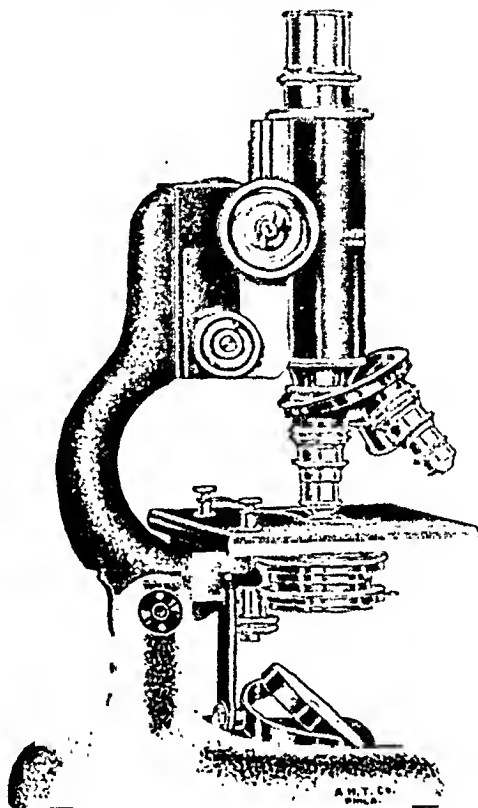
349 Broadway, New York

Philadelphia Chicago San Francisco Pittsburgh
Dallas Kansas City Atlanta



M I C R O S C O P E S

THE TEST
IN OUR STOCK FOR IMMEDIATE SHIPMENT
OF SERVICE



No. 31724. FFS8 Microscope. \$132.00

Under present manufacturing conditions, the immediate availability of our large stock of Microscopes has proved of distinct service to many laboratories. We now have on hand for immediate delivery in quantities ordinarily required, the following Bausch & Lomb Microscopes at original factory prices:

F	Microscopes, with lever fine adjustment,	without substage
FF	" " " " "	substage and Abbe condenser
FS	" " " side " "	without substage
FFS	" " " " "	substage and Abbe condenser
CAS	" " " " "	substage and revolving stage
DDS	" " " " "	and complete substage
		complete substage and revolving mechanical stage
CAE	" mono-objective binocular	
APS	" portable	
KA	" binocular, Greenough type	

Copy of Supplement No. 54, "Microscopes, Microtomes, Photo-Micrographic Apparatus and Accessories," sent upon request.

ARTHUR H. THOMAS COMPANY

WHOLESALE, RETAIL AND EXPORT MERCHANTS
LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE

PHILADELPHIA, U. S. A.

Laboratory Diagnostic Agents

ANTIGENS

- Acetone Insoluble Antigen (Beef Heart), in 5-cc vials.
- Cholesterinized Beef Heart Antigen, in 5-cc vials.
- Cholesterinized Human Heart Antigen, in 5-cc vials.
- Gonococcus Antigen, in 1-cc bulbs and packages of six 1-cc bulbs.
- Tubercle Antigen, in 5-cc vials.

AMBOCEPTORS

- Anti-Human Amboceptor, in 1-cc bulbs.
- Anti-Sheep Amboceptor, in 1-cc bulbs.

SERA

- Anti-Human Precipitin Serum, in 1-cc bulbs.
- Human Blood Typing Serum, Type 2, package of five capillary tubes (clear glass).
- Human Blood Typing Serum, Type 3, package of five capillary tubes (amber glass).
- Antipneumococcic Serum (Diagnostic) Types 1, 2 and 3, each in 10-cc vials.
- Antityphoid Serum, in 10-cc vials.
- Antiparatyphoid Serum, "A," in 10-cc vials.
- Antiparatyphoid Serum, "B," in 10-cc vials.
- Antimeningococcic Serum, Groups 1, 2, 3 and 4, each in 10-cc vials.

Parke, Davis & Company



We Announce



THAT on and after September 15, 1920, the Harmer Laboratories Company occupies its new and completely equipped plant in Lansdowne, Pa., which is just outside Philadelphia and readily accessible by train or trolley.

Improved facilities will not only enable us to strictly maintain the high standards of Harmer Bacteriological Dyestuffs but also to materially increase their output and cooperate to even a better extent in the matter of delivery and individual service.

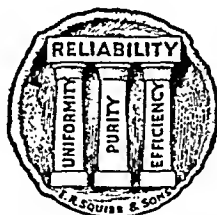
A cordial invitation is extended to all those interested to inspect these new quarters and meet the organization that is dedicated to the promotion and development of All-American scientific dyes and chemicals. Incidentally, do you have our complete list? A postcard brings it.



***The* HARMER
LABORATORIES
LANSDOWNE, PA.**



PURITY



POTENCY

The Seal of Trustworthiness

SQUIBB

Antitoxins
Serums
Vaccines
Chemicals

Seasonable Biologics:-

TYPHOID VACCINE

(Plain or Combined)

PASTEUR ANTI-RABIC VACCINE

(21 Treatments Complete)

TETANUS ANTITOXIN

(Immunizing or Curative)

THROMBOPLASTIN

(Local or Hypodermic)

For The Venereal Campaign:-

SOLARGENTUM

(20% pure silver in colloidal form)

PROTARGENTUM

(8% pure silver in organic combination)

PROPHYLACTIC OINTMENT

(30% Calomel)

E. R. SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.
80 Beekman St., New York New Brunswick, N. J.

Spencer Supremacy

In Microtome Building

Is Shown In

Rotary Microtome No. 820

The only Rotary Microtome ever built with an incline-plane feed.

It completely overcomes the inaccuracies usually encountered in other Rotary Microtomes, due to the up-and-down movement of the object.

In this microtome the feed and the movement are entirely independent.

IT'S SUPREMACY

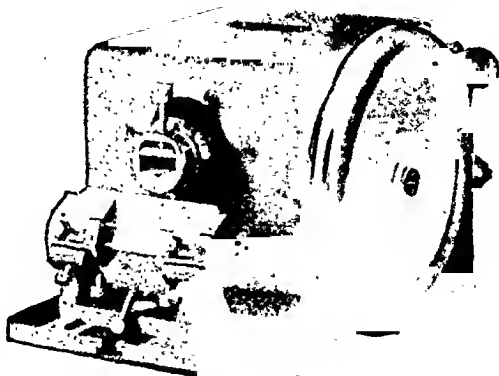
has gained for it an international reputation for perfection. It is in use in every important laboratory in America and in leading laboratories throughout the world.

Prompt Deliveries Now

SPENCER LENS COMPANY

Manufacturers

Microscopes - Microtomes - Delinescopes
BUFFALO, N. Y.



Spencer Rotary Microtome No. 820, complete with knife., \$180.00

Good Ventilation is Essential to Public Health and Comfort



The question of Ventilating street cars is beginning to receive the attention which its importance to **PUBLIC HEALTH and COMFORT DEMANDS.** It is a recognized fact that many **WINTER DISEASES** are the result of insufficient air circulation and that **ADEQUATE VENTILATION** is a highly important factor in preventing the spread of respiratory diseases.

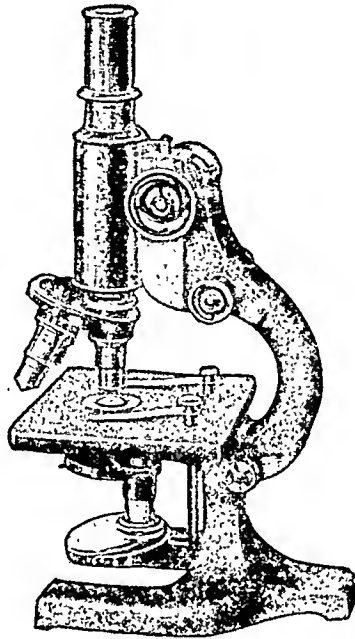
During the past six years **UTILITY HONEY-COMB VENTILATORS** have been installed on approximately 16,000 cars, and are being more universally used than all other ventilators, because they have proven far superior. In tests made in Chicago, New York City, Washington, D. C. and Cleveland, Ohio, in which were tried thirteen other car ventilators, the **UTILITY HONEYCOMB VENTILATOR** was found to possess the highest merit, and was given a 100% efficiency rating by the U. S. Railroad Administration, Committee on Standardization.

New Bulletin on Ventilation Mailed on Request.

Railway Utility Co.,

Mfrs. of Ventilators and Thermostatic Heat
Regulators for Steam Railway and street cars

151 W. 22nd St.
Chicago



Bacteriological Microscopes

We offer instruments from the factories of the Spencer Lens Company and Bausch & Lomb Optical Co. especially suitable for water and other Sanitary Laboratories.

We carry a full line of chemical and bacteriological supplies to conform with the specifications of the American Public Health Association and other Sanitary Committees.

Catalogues on Application

E. H. Sargent & Company

Importers, Makers and Dealers in Chemical Apparatus
and Chemicals of High Grade Only

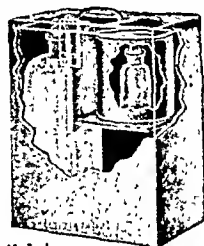
155-165 E. Superior St.

CHICAGO, ILL.

APPARATUS TO MEET THE REQUIREMENTS OF THE Standard Methods of Water Analysis FOR 1920

PUBLISHED BY THE A. P. H. A.

CAN BE FURNISHED IMMEDIATELY FROM STOCK



Water Sample Case



Water Sample Bottle



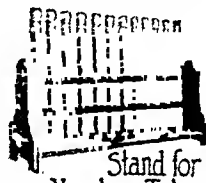
Color Comparison Tubes



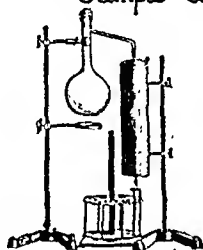
Fermentation Tube



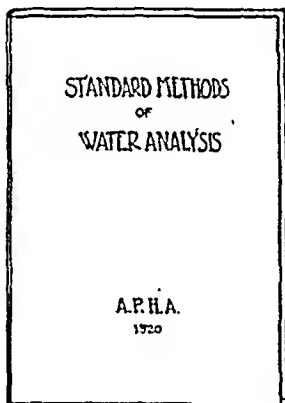
Fermentation Tube Support



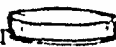
Stand for Nessler Tube



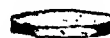
Water Testing Apparatus



Frosts Gasometer Chart



Culture Dish



Culture Dish Cover



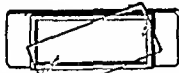
Counter Hand Tally



Turbidity Scale



Magnifier



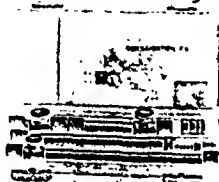
Sedgwick-Rafter Funnel



Counting Cell & Cover Slip



Eyepiece Micrometer



Jackson's Turbidimeter

Colorimeter

FOR A COMPLETE DESCRIPTION OF THE ABOVE SEND FOR CATALOG C1

CENTRAL SCIENTIFIC COMPANY

LABORATORY

APPARATUS

SUPPLIES

460 E. Ohio St.,

Chicago, U.S.A.

Chicago, U.S.A.

U.S.A.

When writing to Advertisers, say you saw it in the JOURNAL

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 W. Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Ave., Boston, Mass.

Subscription price \$4 per year. American Public Health Association membership, including subscription, \$5 per year.
Subscriptions and memberships may be sent to the A. P. H. A., 169 Massachusetts Ave., Boston, Mass.

Vol. X

NOVEMBER, 1920

No. 11

PRESIDENTIAL ADDRESS OF W. S. RANKIN, M. D.

PRESENTED TO THE ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, SAN FRANCISCO, CALIFORNIA, SEPTEMBER 13, 1920.

INTRODUCTORY

Ladies and Gentlemen:

If I understand the sentiments and the traditions of this Association, I know that your selection of a presiding officer is determined by considerations that lie above and beyond mere personal relations and ends. Nevertheless, anyone called to serve as your President would have to be totally unmindful of that distinguished group of leaders in the public health movement who have occupied this office not to feel the humility that comes from walking in their steps and the honor of sitting in their places. I deeply appreciate the personal distinction that you have conferred upon me.

On my election to the Presidency of the Association, nearly a year ago, I at once began to consider what were our major interests—what matters were of such large and common concern as should appeal to the different administrative and scientific groups represented in this organization. There seemed to be three such matters of outstanding importance: the first was the maintenance of the health and vigor of the Association, keeping up the momentum of growth developed under the preceding administration; the second was the acceptance by the Association of both its

opportunity and its obligation to assist other national agencies in the coördination and enlargements of federal health activities; the third was the recognition by the Association of the still greater need and the larger opportunity of assisting in the coördination and development of the extra-governmental public health agencies. In this address I will confine myself to a discussion of what has been accomplished during the past year with respect to each of these three major interests of our Association.

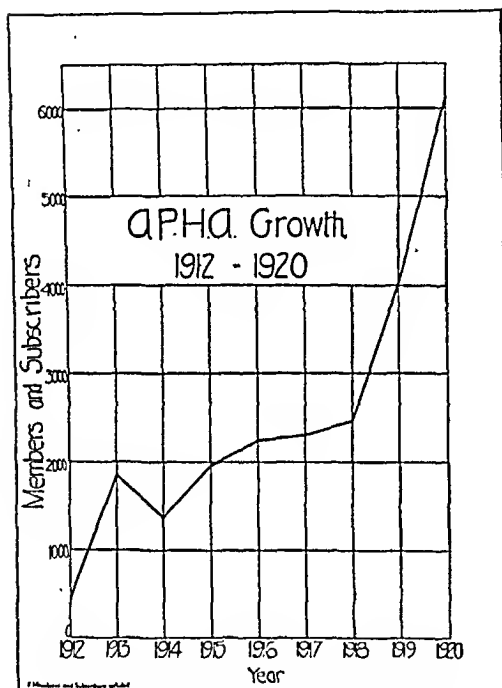
GROWTH AND PRESENT CONDITION OF THE ASSOCIATION

Self-preservation is the first law of nature for every individual and agency. The development of self is a primary duty for it is only out of a strong self that efficient service comes. So with this Association, if it is to occupy the place of service which is open to it, if it fears God and takes its part, it must look first to the condition of its own life, must increase its power and influence, must maintain a healthy growth. Enlargement of our membership, of our funds, of our power to work, is our primary duty.

Less than a year ago, at our last meeting in New Orleans, President Frankel stated that the Association should have

a minimum income of \$50,000 per annum and a membership of not less than 6,000. His ideal of yesterday has become the achievement of today. The income of the Association in 1918 was \$22,000; in 1919, \$33,000; and in 1920, \$49,015.04. Members and subscribers for the same years were, for September, 1918, 2,345; for September, 1919, 4,044; and for September, 1920, 6,000. The growth of the Association in membership, subscribers and funds during the past five years is shown in Chart A.

CHART A



The membership campaign that has been carried on during the past six months was on a basis of state and provincial quotas, the quota for each state and province being fixed largely in proportion to its population. The six leaders in the campaign in the percentage of the quota reached are: Utah, 472; New Mexico, 364; North Carolina, 290; California, 195; Colorado, 142; and Saskatchewan, 142. The six leaders in the campaign in the total number of new members added to the Association are:

New York, 208; North Carolina, 172; California, 168; Maryland and the District of Columbia, 146; Ohio, 109; and Illinois, 107. There were 16 states and provinces that secured the quota of new members assigned them; two other states and provinces exceeded 75 per cent of their quotas, making a total of 18 states and provinces that exceeded 75 per cent of their quotas. Chart B indicates the present standing of the states and provinces according to the number of members in proportion to their population.

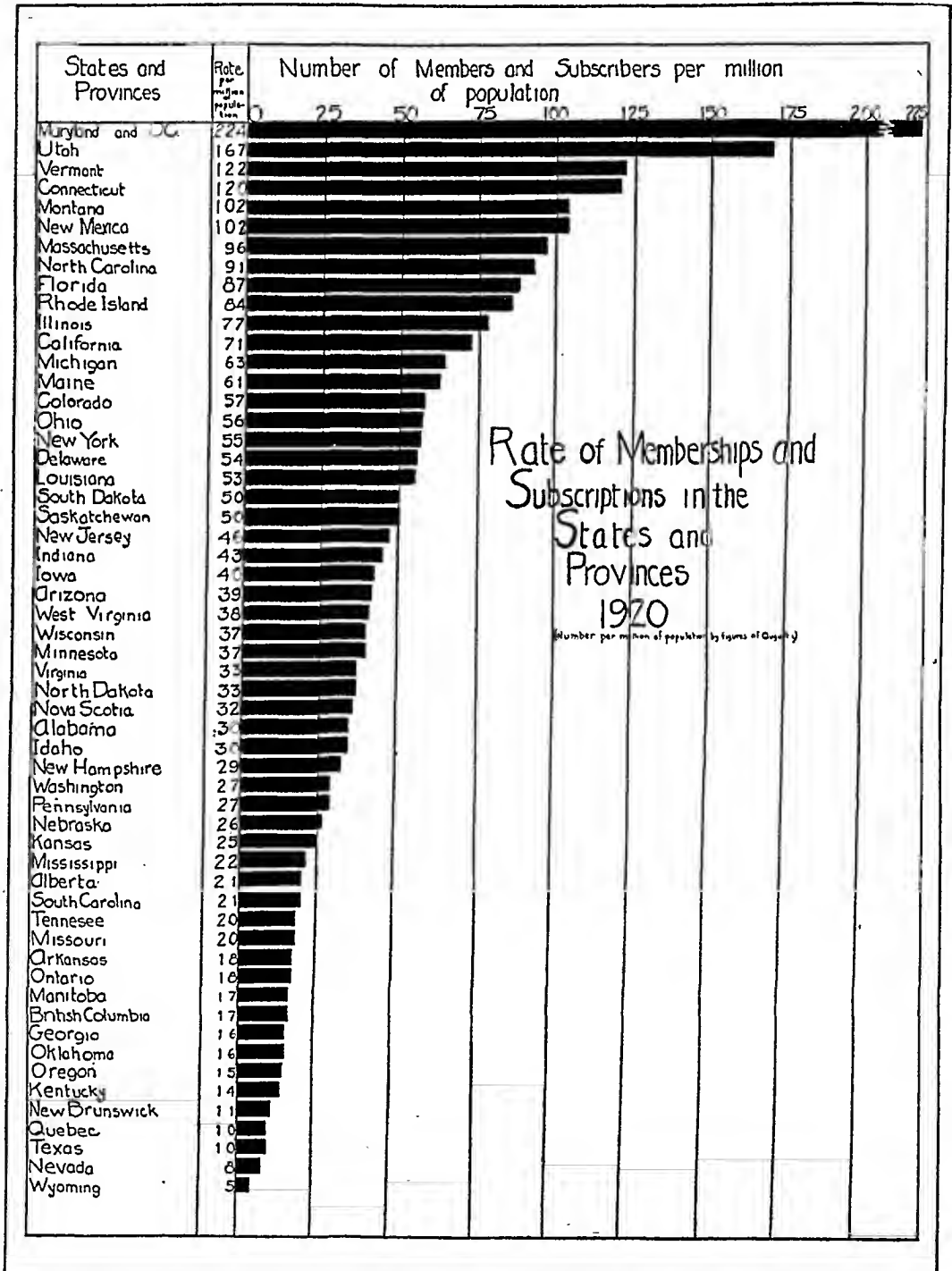
The membership campaign should be continued during the coming year until the Association has not less than 7,500 members and the campaign for corporate and sustaining memberships should be vigorously pushed until there is a total of 500 sustaining members—about eight or ten \$50 memberships for each membership district—state and province. These objectives are neither impracticable nor ambitious, and are easily obtainable with a normal interest on the part of the members of the Association. Sixteen states and provinces in reaching their quota of a 7,500 membership have demonstrated that such a regular membership is possible and that without any great difficulty. The possibilities of a successful appeal in behalf of sustaining and corporate members was demonstrated in one state where a single letter soliciting corporate and sustaining memberships was addressed to a list of 85 public-spirited and financially-able individuals and corporations, and which brought in 15 sustaining and corporate members, a total in funds of \$750 for the support of the Association. In many states and provinces the chairman of the membership committee, in most cases the chief executive health officer, assumed direction of the campaign with the complete understanding that his activities would be limited on account of special duties that could not be set aside. Many of these officials will wish to have their states and provinces represented as

strongly in the Association in proportion to population as any other state or province, and will be glad to coöperate with the officers of the Association during the

coming year in arranging for a special membership drive to complete their quotas.

In connection with the growth of the

CHART B



Association during the past year and as an important new activity it is a pleasure to announce the creation of a committee for a careful and rather complete survey of municipal health procedure, made possible through a generous appropriation of \$5,000 by the Metropolitan Life Insurance Company. A committee for this survey, consisting of Prof. C.-E. A. Winslow, Dr. Chas. V. Chapin, Dr. Louis I. Dublin and Dr. W. H. Frost, has been appointed.

COORDINATION OF FEDERAL HEALTH ACTIVITIES

The members of the Association will recall that it was pointed out at the New Orleans meeting last year that Federal health activities were now being conducted by 33 bureaus, scattered about under five Cabinet Departments; that there was not only a lack of coördination between these bureaus and departments, but that there existed considerable overlapping of work, some conflict of interests, and, as was demonstrated at that meeting, actual opposition; that the need for replacing our present patchwork of Federal health activities with a consolidated program of carefully considered and properly related public health functions was apparent to all; that the Association placed itself on record as recognizing the aforestated defects and needs in unanimously adopting, by a rising vote, the following resolution:

"WHEREAS, it is believed that the development, maintenance and protection of health in its citizens is one of the fundamental functions of civil government; and

"WHEREAS, lack of coördination in National Program and administration and lack of orderly proportionate expansion of the functions of the Federal health service in the United States has resulted from the present distribution of functions among various departments of the Government; therefore, be it

"RESOLVED, by the American Public

Health Association, that measures should be taken to assure for the future a National Health Program and a co-ordinated Federal health administration; and further be it

"RESOLVED, that to accomplish these ends a standing committee of members of the American Public Health Association be appointed by the President of the Association to study the needs of the National Health situation, confer with other agencies and to do whatever lies in its power to secure the appointment of a special Congressional Commission on the coördination of the Federal health activities along the general line of the so-called France Bill."

In adopting this Resolution the American Public Health Association brought itself into concert of action with the Council on Health and Public Instruction, representing the American Medical Association, and the Conference of State and Provincial Health Authorities, both of which organizations had previously taken identical positions. The President of the Association, in accordance with the above Resolution, appointed as your Committee on the Coördination of Federal Health Activities, Dr. Haven Emerson, Dr. Lee K. Frankel and Dr. Chas. V. Chapin. This Committee is now working in harmony with a Committee representing the American Medical Association and composed of Dr. Victor C. Vaughan, Dr. Frederick R. Green and Dr. W. S. Rankin, and a Committee representing the Conference of State and Provincial Health Authorities and composed of Dr. S. J. Crumbine, Dr. C. St. Clair Drake and Dr. A. W. Freeman.

These three committees, working together as one, and in line with the Resolution of the Association, prepared and brought to the attention of Congress Concurrent Resolutions 14 and 33, the first being the Senate Resolution and the second the House Resolution. This Concurrent Resolution provides: (1) for a Congressional Commission to

make a survey of present Federal health departments, divisions, bureaus, offices, and agencies, the laws creating them and defining their functions, any overlapping of work and conflict of interest, their coördination and the appropriations provided for them; (2) that the Commission is authorized to summons persons, to have them produce records, to administer oaths,—in short, is fully empowered to secure such information as it may need in arriving at sound conclusions; (3) that the Commission shall make such recommendations as to coördinating and improving the public health work of the Federal Government as the survey suggests; and (4) that such funds as the Commission may need in employing experts for assisting in the actual work of the survey shall be paid out of the contingent funds of the Senate and the House. This Concurrent Resolution was introduced in the Senate by Senator France and has passed the Senate. The Resolution was introduced in the House by Mr. Dennison, of Illinois, and was referred to the Committee on Rules but not reported out during the last session. The Resolution having passed the Senate, will go over on the calendar and will not need to be reintroduced in the Senate at the next session of Congress. Mr. Dennison has stated that he will call up the Resolution in the House early in the next session. A number of the leaders of both parties in the Senate and in the House have been conferred with and there seems to be not only no opposition to the Concurrent Resolution, but a very general sentiment in favor of it.

The American Medical Association, meeting in New Orleans in April, of this year, approved and endorsed the Concurrent Resolution 14 (the Resolution that has passed the Senate), and urged its passage by the House. The Association took the further position that the survey called for "will furnish the fundamental information needed and will mark a long step forward in the se-

curing of such a national health organization as our country requires." It will be noted that the American Medical Association in the aforesaid action seems to take the position that the survey of federal health activities should be preliminary to taking steps for securing a national health department with a cabinet officer, to which form of federal health administration the Association in a subsequent resolution committed itself. The important point, not to be lost sight of, is that the Congressional survey is regarded by the three agencies working together, the American Medical Association, the American Public Health Association and the Conference of State and Provincial Health Authorities, as the first step in the reorganization of federal health activities.

The present outlook for real improvement in the public health functions of the Federal Government is most encouraging for the following reasons: (1) there seems to be a general and rather thorough understanding of the existing defects and the remedies needed; (2) leaders in Congress seem favorable to a study and reorganizing of federal health activities; (3) the political outlook, as it bears upon federal health work, is encouraging. The National Platform of the Republican Party says: "The public health activities of the Federal Government are scattered through numerous departments and bureaus, resulting in inefficiency, duplication and extravagance. We advocate a greater centralization of the work of the federal, state and local health agencies." While it is to be regretted that the National Platform of the Democratic Party is silent on so important a question as national health, the great interest taken by Governor Cox of Ohio in the development of one of the most advanced state health programs lends every encouragement to believe that if the next administration is Democratic national health work will be well cared for.

COORDINATION OF EXTRA-GOVERNMENTAL
HEALTH AGENCIES

Dr. Geo. E. Vincent, President of the Rockefeller Foundation, a little more than a year ago referred to the large number of extra-governmental national health agencies as the "57 varieties." Recently the American Red Cross has listed 139 voluntary organizations that have some sort of a national health program. It seems safe to say that there are in this country about as many voluntary national organizations for the prevention of unnecessary deaths as there are causes of deaths—189—given in the international classification. This highly divided state of national public health influences results in wastefulness, weakness and confusion:

In *wastefulness* of both money and energy: of money from the diversion of funds collected from the people to maintain so large a number of organizations; of energy on account of overlapping functions. Like the proud-flesh, that grows but does not serve, this excessive organization of civic interest in health uses too large a proportion of the funds drawn from the public to maintain office forces and far too little of these funds in useful service.

In *weakness*, from the division of public interest in health conservation into small and, relatively speaking, ineffective fractions. Like the individual fibers of a rope, almost useless in themselves, these many fibers, bound into one strong cord, would be capable of lifting great burdens of suffering and expense from the shoulders of our people.

In *confusion*, because the majority of these voluntary health organizations, in addition to their smaller and internal objective, the improvement of their individual members and the standardization of methods, have as their larger, common, ultimate objective the average citizen and home. In reaching this larger objective the average citizen and home, these organizations have two

possible routes: one a direct appeal by letter, prepared literature, press, and public meeting, to the individual and family; the other an indirect route, the quicker and more economical, through that agency that represents the average citizen and home, namely, his government, national, state or local. In electing this second route to its objective the extra-governmental agency undertakes to persuade the government to reach through its channels the citizen and home and either to influence or compel the citizen to adopt a certain line of conduct. If successful in persuading the governmental agency to assume such a task the extra-governmental agency releases its resources and forces for new endeavors in the extra-governmental field. Consider now, if you please, the confusion resulting from so many extra-governmental agencies attempting to persuade the government, either national, state or local, to patch its general program with the special interest of the voluntary agency. Obviously, a government's health program must be a balanced ration, must consider not special diseases and special groups, but the general public health needs. An extra-governmental agency's health program, nine times in ten, is a special health program dealing, in one case, solely with tuberculosis, in another with venereal diseases, in another with mental hygiene, or with child hygiene, or with recreation, or with public health nursing, or with malaria, or cancer, et cetera. There is inevitable conflict and confusion between the general program of the government, representing the majority, and the special program of the extra-governmental agency, representing a minority. In the case of the direct appeal from the voluntary agency to the citizen, the confusion resulting is even greater because the citizen, requested by multiple agencies to do so many and various things, is less able than his government to respond.

The cure for this wastefulness,

weakness and confusion in the public health field is coördination. Coördination removes the wastefulness of overlapping effort and unnecessary overhead charges; it replaces the weakness of excessive and unrelated division with the strength of unity, twisting the many weak, relatively useless, fibers into one strong rope; it does away with confusion in objectives by properly relating the many special programs into one general program, and thereby permits the voluntary and the governmental agency to pursue parallel courses and without conflict.

Coördination not only cures wastefulness with economy, weakness with strength, confusion with understanding, and conflict with coöperation, but it enables public health leadership to go beyond the interests of the professional and scientific groups with an effective appeal for enlistment of the support of the people themselves in the public health movement. United leadership permits a united and tremendously multiplied following, as I shall now attempt to indicate.

United leadership, through a coördination of the voluntary public health agencies would provide a balanced program of essentials that could be carried to the ultimate objective, the American citizen, either by the direct or the indirect route, largely through the means of a popular health magazine. I have such assurance that I am practically certain that sufficient funds for the publication of a first class popular health magazine, attractive in appearance, entertaining and informing in composition, in every respect a high-class periodical, are available whenever a coördination of existing voluntary agencies is brought about. With a magazine of the type described the opportunity and the means for reaching and organizing the people in support of public health would be at hand. Without such a magazine, without something to give the average citizen what in itself is worth his member-

ship dues of three, four or five dollars, and something that retains and augments his interest in the public health movement, it is impossible to enlist general support. Consider in this connection what the Journal of the American Medical Association means to that organization of something more than 75,000 members. Without the Journal it would never have been possible to have developed the Association to its present strength, and if the Journal were discontinued tomorrow the Association would undergo almost a fatal shrinkage. The National Geographic Society is a still more remarkable organization, an organization of 630,000 members, developed through the means of an attractive publication. The point has been made, however, on good authority, that the success of a popular health magazine cannot be predicated upon the large circulation of the *National Geographic* for the reason that the subject treated in the latter lends itself so well to beautiful illustrations. While flora, fauna and art are most entertaining, through the photographs, it is a fact that the subject of health holds a more extensive and intensive interest than the subject of geography. It is conservative to say that from ten to one hundred persons are interested in health where one person is interested in the subject of geography. And again, and most important, where the publication devoted to geography has had to make its own way without assistance, a popular health magazine would, from the outset, have as its friends and promoters health departments, federal, state and local, rural and urban, Red Cross Chapters, civic and philanthropic organizations, and tens of thousands of the more progressive, public-spirited physicians and nurses of the country. This point should not be lost sight of: the magazine is all-important; it is an essential means, but not the objective. The objective is to reach the people, to make them participants in the public health movement.

Coördinated leadership makes possible the magazine; the magazine makes possible the organization of county and district health societies with memberships ranging from 100 to 1,000. These county and district societies make possible, through federation, the state and provincial societies with memberships ranging from 5,000 to 25,000; these state and provincial health societies make possible, through federation, a great American health association, with a membership of from a half million to several million. The plan of this organization would be democratic, each local society represented in a state or provincial house of delegates in proportion to the number of its members, and each state and provincial society in turn represented in the central or American association would provide a whole-time digeneral, the plan followed by the American Medical Association would be easily possible. The financial strength of both state and provincial and American association in proportion to its members. In general, the plan followed by the American association would provide a whole-time directing personnel. This directing personnel of the extra-governmental agency should be in close touch with the official health agencies, but not dominated by them. The governmental and the extra-governmental fields should be kept separate, the one to carry out the expressed will of the majority and the other to convert minority ideas into majority convictions and law.

POSSIBILITIES FOR COÖRDINATION

During the last six months Dr. Livingstone Farrand, Dr. Chares J. Hatfield and the speaker have held several informal conferences regarding the possibilities of bringing about coördination of extra-governmental health agencies. As an outcome of these informal conferences it was found possible to secure practically the full time service of Dr. Donald B. Armstrong for visiting many leaders in the public health movement,

conspicuously identified with the more important extra-governmental agencies, and for collecting opinions and impressions on the possibilities of coördination of these agencies. Dr. Armstrong in this time has conferred with more than 100 leaders who are identified with more than 20 of the larger national health agencies. He has also collected and examined the constitutions and by-laws, statements of policies, and reports of extra-governmental health agencies and has gone through much literature that relates directly or indirectly to the principles of affiliations and coördinations of social groups. The impressions gained by Dr. Armstrong through these conferences and studies may be stated as follows: (1) there is a general recognition on the part of all leaders that a coördination of extra-governmental health agencies is necessary in the interest of efficiency; (2) these leaders believe that coördination is possible; (3) they seem to be willing to go more than half-way to bring it about; and (4) they feel that the initial steps should be taken at an early date.

Three possible plans for coördinating these voluntary agencies have been suggested:

The first plan is the organization of state and provincial health societies with constituent county and district societies, respectively, each county and district society to be represented in the state or provincial society by delegates in proportion to membership. The organization would be effected through the leadership of state and local health officials, officers in state and county medical societies, and in some states through now existing voluntary health agencies. The state and provincial health societies would be organized into an American health association, each state and province being represented in the general association by delegates in proportion to membership. This organization in these several branches at first would be restricted, perhaps, largely to a nucleus of profes-

sional groups, but with the publication of a popular health magazine, made possible through federation, the more intelligent people, the leaders in the community, would be enlisted. This plan, if followed, would ignore existing national associations, which would either satisfy themselves with a limited sphere of action or become a part of the general organization.

The second plan proposed is: (1) that the important national associations come together in an affiliation or a conference or a merger; (2) that through a central committee, a plan for state and provincial and local societies be developed and urged for adoption upon states and provinces. While the first plan represents an organization effected from the bottom up, the second plan represents an organization brought about from the top down. The second plan has the advantage over the first in conserving and utilizing national leadership and resources. The two are not incompatible. The organization may start from both ends.

The third plan proposed, and the one which Dr. Armstrong found by far the most popular with the leaders whom he consulted, consists of bringing together the leaders of the larger national health agencies, at first informally, and subsequently, after these leaders have conferred with the officers of their organizations, bringing together formally the representatives of the more important agencies for the purpose of effecting a conference, with the maintenance, perhaps, of a simple but full-time staff to be associated and housed with and probably financed by the Red Cross. The idea here, to quote Dr. Armstrong, "is a marriage between the Red Cross resources of influence and funds and the specialized channels of service of the voluntary health agencies." Under this Red Cross Conference plan each organization represented in the conference would preserve its sovereignty, but would come into working relations

with other health organizations and under a steady, growing influence would find common ground for unity of purpose and concert of action.

There is a general impression among the leaders with whom Dr. Armstrong has conferred that the initial step in the development of coördinated activities, that is, the calling together informally for the first conference of representatives of different organizations, should be left to Dr. Livingstone Farrand. It is perhaps best for such a movement to start, not with some particular health agency, but through some one who is equally interested in the objectives of all of them and whose relation with the entire group is cordial. Such a course will prove more satisfactory than if one public health agency appeared to assume the role of leader and called the others to order. My understanding is that Dr. Farrand will call the initial and informal conference in October.

The three plans of organization are thoroughly democratic in principle. Each makes possible a popular health magazine and, through it, an extension of the organization of the public health interests to the masses of the people, or, to quote Dr. Frederick R. Green, "to treat the intelligent people of this country not as beneficiaries in the public health movement, but as participants."

Popular, active participation, not passive interest, in the public health movement, is essential to any large and real success. The greatest weakness in the appeal of the true prophets of public health is that they have been satisfied to reach, and, relatively speaking, have not reached beyond, the scientifically and officially interested groups. They have fallen short of their real objective, the American citizen and home. On the other hand, the greatest strength of the false prophets, those who teach erroneous doctrines of the functions and impairments of the body and the prevention and cure of disease, is that they, not having a scientific and official group

to which to appeal, have gone directly to Caesar, the American citizen. Just at this time, I am reliably informed, there is widespread propaganda on the Pacific Slope for an amendment to state constitutions forbidding compulsory vaccination under any circumstances. These anti-vaccinationists realize that to get a legislative reaction favorable to their ideas they must bring it about as a reflex response to popular demand—they must reach not the few, the leaders, but the multitude, the voters. We shall do well not to lose sight of their strategy.

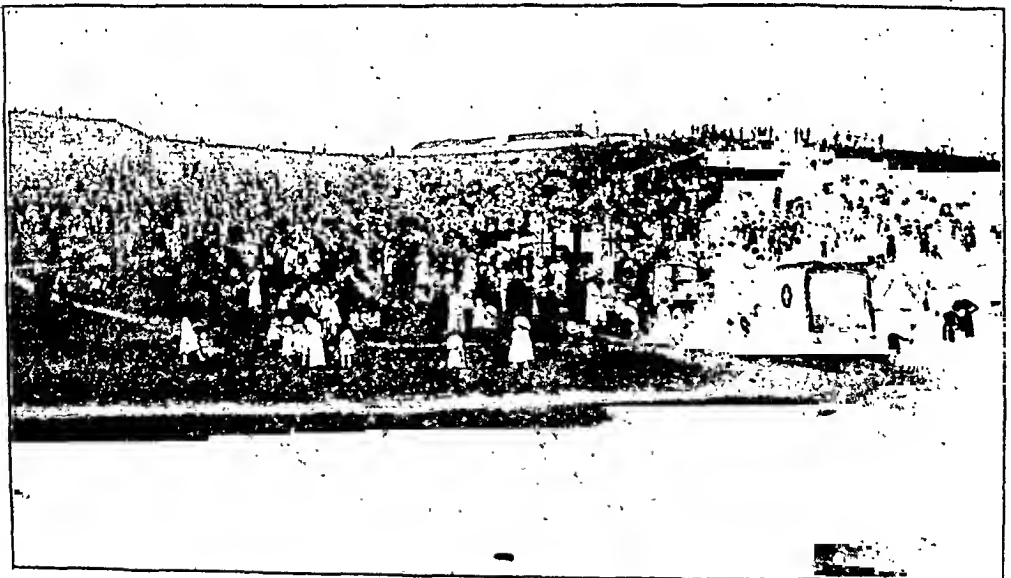
Until this larger objective of the As-

sociation, the enlistment of the masses in its work, is attained, its thought and energies should not be diverted into other and smaller channels of service. An affiliation, a coördination of machinery and functions, may call for some sacrifice of identity, that trademark of selfishness, but if the Association is as big as its real friends believe it to be, it will not protest against sacrifices of identity for larger service, but will be guided by that eternal principle, namely, For whosoever will save his life shall lose it; and whosoever will lose his life for a righteous cause shall find it.



RETURN OF THE NOVA SCOTIA PUBLIC HEALTH CARAVANS

In the October issue, page 779, the readers of the JOURNAL had the story and saw the picture of the start of the Nova Scotia health caravans. After a triumphal tour of 49 days among the fishing villages of the Province they returned to Halifax and a tremendous public health pageant greeted them in a natural amphitheatre of Citadel Hill. There were 5,000 persons gathered below the old fort, where a choir of 200 sang "Onward, Christian Soldiers," and other appropriate hymns and patriotic songs. The Lieutenant-Governor of the Province presided at this great home-coming event, and there were addresses by local notables.



PRESENT STATUS OF PLAGUE, WITH HISTORICAL REVIEW

W. H. KELLOGG, M. D.

*Director Bureau of Communicable Diseases, State Board of Health,
Sacramento, Cal.*

Read before General Sessions, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

Health officers have known something of the early plague situation in California, but never before has the story been related in such stirring fashion as in this paper. It is an experience that, fortunately, seldom goes to such lengths. The necessity for strenuous extermination activities now against plague carriers is patent.

THE first appearance of plague on the North American Continent was in 1900 at San Francisco, when the body of a Chinese, dead of this disease, was discovered in the Chinese quarter.

I was then bacteriologist for the City Board of Health, and the case was referred to me by the city physician, who was required to sign the death certificates of Chinese dying unattended by white physicians. We had been on the lookout for plague, as it was present in Honolulu, which port it had reached on its westward march in December, 1899.

This case was proven bacteriologically to be plague, and the Board of Health of San Francisco, on receipt of the preliminary findings, placed the entire district known as Chinatown, comprising about twelve square blocks, in quarantine, the quarter being roped off and police placed on guard.

The events which followed will be referred to later. For the present, suffice it to say that the disease continued to manifest its presence by the discovery of cases now and then until a total of 121 cases and 113 deaths had been reached by February, 1904, when the last case of this series was found.

In May, 1907, a year after the great fire and earthquake, plague was again discovered in San Francisco. A sailor taken to the Marine Hospital from a tug in the bay was found to be suffering

from plague, but he died without being able to give any account of himself, and the tug was lost off the Mendocino coast, thus effectually blocking any further investigation. On August 12 the second case of the second epidemic appeared, followed by 13 others before the end of the month.

The citizens of San Francisco, including the politicians, the press, and the doctors, had learned their lesson in the first epidemic, and, as a consequence, we have a history of events in 1907 and 1908 that is in marked contrast to that of 1900 and 1901. Doctor Blue was again called and early placed in charge and, with his previous experience and the unanimous support of all interests, carried on the work under the most favorable conditions, the details of which and results attained being too well known to need description here. The epidemic lasted six months, and the total number of cases was 160, with 77 deaths; this time not in the Chinese quarter alone, but scattered all through the city. The last case of the series occurred on June 30, 1908. During the year 1907 seven cases were found in Seattle, Wash. In the years intervening between February 1, 1908, and the end of the year 1915, inclusive, sporadic cases of human plague of squirrel origin occurred in California to the total number of 13 in the counties of Los Angeles, Alameda, Santa

Clara, San Benito, Contra Costa, San Joaquin and Monterey. During the years 1916, 1917 and 1918 no cases of human plague are known to have occurred anywhere in the United States. Extension of the infection to the ground squirrel population of the rural territory adjacent to San Francisco was first demonstrated in August, 1908, although it is probable that the infection was carried from rats to squirrels in the vicinity of the Port Costa warehouses during the first epidemic in 1900-1904. This probability is indicated by the occurrence of two deaths from plague in widely separated locations in Contra Costa County in August, 1903. The ground squirrels of this state have, therefore, harbored the infection for nearly twenty years, and if it is not eliminated from among them by a very wide and expensive campaign of extermination there seems little room for doubt that a permanent endemic focus has been established. The extent of plague prevalence among the ground squirrels is shown by the following figures from the Public Health Reports of recent date. For the period of the report, which varies with different counties from a few days to three months, ending July 10, 1920, infected squirrels were found as shown below:

Alameda County 28, Contra Costa County 46, Merced 1, Monterey 3, San Benito 16, San Mateo 3, San Joaquin 4, Santa Clara 12, Santa Cruz 26, and Stanislaus 2.

The figures for the total number of infected rodents found since the beginning of the work in 1907 are startling. In San Francisco the number of rats found was 398, the last one having been discovered in October, 1908, and in Oakland 126 rats, the last one in December, 1908. Alameda County has a record of 431 squirrels, the last being found in September, 1919. Contra Costa County holds the record, the total number of infected squirrels found being 1,698.

Following the decade ending with 1918, plague showed a tendency toward

recrudescence. In Oakland a series of 13 pneumonic cases occurred,* in August, 1919, the first of the series having its origin in exposure to plague-infected ground squirrels.

This appearance of pneumonic plague in epidemic form, small as was the outbreak, is very disquieting. Plague of squirrel origin seems particularly prone to attack the lungs when transmitted to man, and the danger is that in another such series of cases a sufficient degree of specific organ virulence may be developed to insure the rapid spread of



RUMOR has it that Dr. Kinyoun may soon receive a strong blast from Washington that the quarantine service in San Francisco would be better without him.—*Morning Newspaper, Wash. Oct. 15, 1900.*

this type. If the conclusions of Teague and Barber† are correct, and they appear most plausible, there is much to be feared from this contingency under circumstances permitting extension to some of our eastern states in winter. It is easily possible for a person, after inoculation by a squirrel flea, to travel to some eastern point, reaching his destination before the onset of symptoms. If now he develops a bubo with a secondary pneu-

*Kellogg, W. H.; *Am. Jour. Pub. Health*, July, 1920, pp. 600-605.

†Osear Teague and M. A. Barber; *Philippine Jour. of Science*, 1912, pp. 157-172.

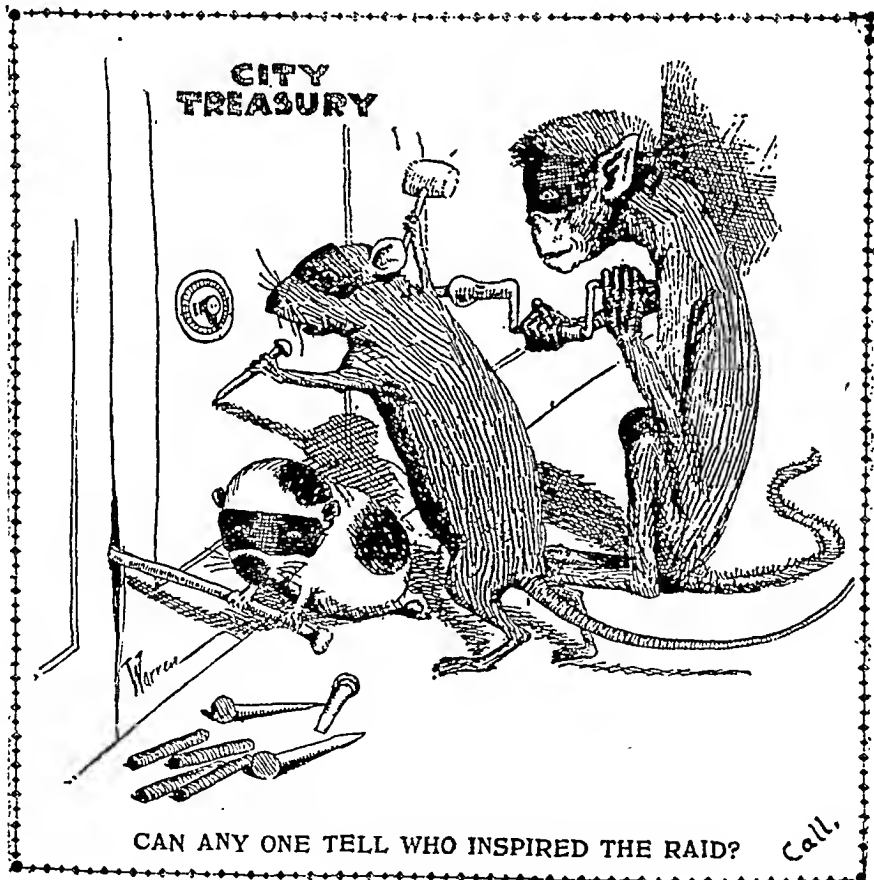
monia, as did the first case of the Oakland series, in the proper climatic surroundings for transmission of the infection, the role of plague as a national problem would be immediately recognized. In October of this same year plague reappeared in New Orleans, following an interval of nearly four years since its first appearance in that city. This was followed by three more in October, three in November and five in December.

So far during the present year plague has occurred in California (one sporadic case of squirrel origin), in New Orleans (three cases in May and June), in Galveston, Texas, (two cases), in Pensacola, Florida, (four cases in June and three cases in July), in Beaumont, Texas, (seven cases between June 26 and July 18), and in Port Arthur, Texas, (one case in July). Rat examination by the

Public Health Service in the above-named cities discloses a rat epizootic in Pensacola, Beaumont, Galveston and New Orleans.

The disease is present in so many countries now that a list of those harboring it would include most of the nations of the world. In Europe it has been reported recently in Greece, England, Italy, Malta, Russia and France. In July, 1919, a dock laborer in Liverpool died of plague, and there is little doubt that the infection prevails among the rats of that city. Human cases have recently been reported from Hawaii, and a sharp outbreak is in progress in Vera Cruz, Mexico, where it was first discovered in May of this year. Several cases have occurred recently in Newfoundland.

The events previously referred to as having followed the finding of the first case in 1900, and which served to insure



intelligent handling of the second epidemic were most remarkable, and as they relate to the difficulties of the Board of Health, they will, I am sure, be of interest to all health officers.

This unparalleled series of medico-political events was initiated by the action of the San Francisco Board of Health in quarantining Chinatown. While in the light of our present day knowledge of plague control methods the quarantine of the quarter in this manner was not a necessary procedure, it must be remembered that this was the first appearance in history of plague in North America and the first on the Western Hemisphere, excepting at Santos, Brazil, where it had appeared two months before.

It had been absent from western Europe for two hundred years until the Oporto appearance in August, 1899. Having in mind the historical epidemics of the middle ages and the more recent mortality in India, it is not to be wondered at that the Board of Health expected a rapid spread of the disease, and that it attempted to keep it within the confines of the quarter in which it was discovered.

No further cases being found during the next few days, the newspapers, on the qui vive for an opportunity to attack the mayor, who had just been elected under the new charter, took heart and gambled on the chance that there would be no epidemic. They launched a campaign of vilification against the Health Board and the Federal quarantine officer, Doctor Kinyoun, that for unexampled bitterness, unfair and dishonest methods, probably never had been and never again will be equalled. (See reproductions of newspaper cartoons accompanying).

The campaign of denial of the presence of plague and of resistance to the Board of Health became a political issue of the most violent character. It involved health officers and boards, both

city and state, and the U. S. Marine Hospital Service; local politicians, members of the State Central Committee of the political party then in power in the state, but not in the city; State Senators, the Governor of the state, the Secretary of State of the United States, the Secretary of the Treasury and the President himself.

Every local paper except one was aligned with the opposition, but it is only fair to state that this one backed the political party of the mayor who had appointed the Board of Health.

The line-up of the medical profession was interesting. A number of men possessing no claim to special knowledge of the subject, never having seen cases of plague, with no training as pathologists, and without seeing either cases or specimens of local origin, broke into print with interviews, stating positively that no plague existed in the city. Most of the physicians taking part in the controversy against the Board of Health were attached in various capacities to a certain private medical school, now defunct, whose president was appointed by the Governor as a member of his reorganized State Board of Health, he having found it necessary to change the complexion of the original board, which was in sympathy with the local board.

The following is an official statement of the San Francisco Clinical Society, an organization of the faculty and graduates of this school, and it serves as an example of the character of the "scientific" opinion used against the board:

"Resolutions of the San Francisco Clinical Society:

"That no infected vessel could reach the port of San Francisco without cases having developed.

"Of the eleven suspected cases reported by the local Board of Health, no two deaths have occurred in the same house, and no focus of infection has ever been discovered. This is positively contrary to the world's history of plague.

"No clinical history of any suspected case of plague has been secured and no diagnosis of a living case has ever been made.

"Only bacteriological tests have been relied upon for the purpose of diagnosis, and such tests are known to be confirmatory evidence only, and alone are never conclusive.

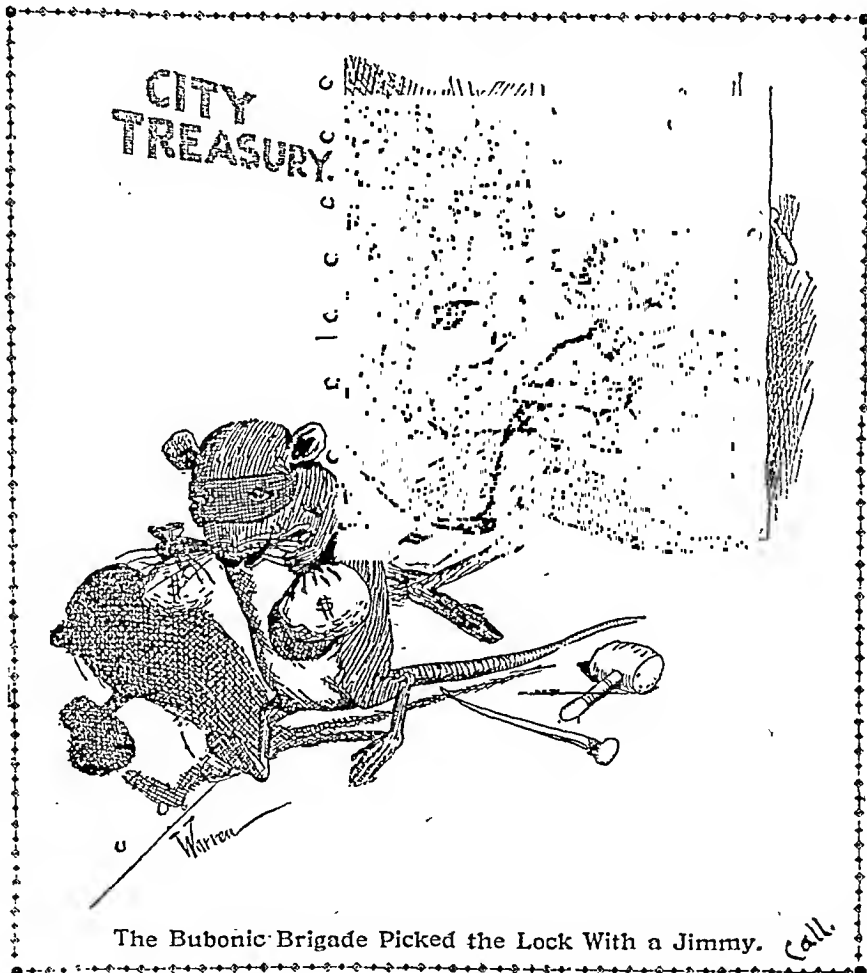
"The health of the supposed infected district has been better and the death rate lower during the past three months of this year, when plague is claimed to have existed, than during any previous months in any previous year in San Francisco;

"Therefore, be it resolved that it is

our firm conviction, based upon the strongest and most conclusive evidence, that no case of plague exists, or has ever existed, in the city of San Francisco."

The Chinese colony numbered about 20,000, and included many wealthy societies, as well as wealthy men. The Chinese are great litigants and employ the best of legal talent. Being citizens of a foreign nation, they have entrée to our federal courts.

The first action was an application for an injunction against the requirement of a certificate of Haffkinization which was being required by the Public Health Service, then the Marine Hospital Service, of all Orientals desiring to leave the



The Bubonic Brigade Picked the Lock With a Jimmy.

city. This was granted on the ground that the requirement was discriminatory. Following this action of the Federal Court, the State Board of Health urged the local board to re-establish the rope cordon around Chinatown, which was done by ordinance of the Board of Supervisors. After this quarantine had been in effect about two weeks, the Chinese, with their staff of highly-paid attorneys, sought to enjoin the Board of Health against interfering in any way with the free movements of these people.

In deciding this case and issuing the injunction, the judge took some pains to express his personal opinion as follows: "If it were within the province of this court to decide the point, I should hold that there is not, and never has been, a case of plague in this city."

In the hearing of this case the attorney for the Board was not permitted to introduce any evidence bearing on the existence of plague in answer to the unsupported statements of council for the Chinese and in answer to their quotation of spurious "authorities."

The Governor of the state early formed an opinion that coincided with that held by the opponents of the Board and he became particularly vigorous, not only in his statements in the press, but in his acts calculated to harass any who held contrary opinions.

In reply to a telegram from Secretary of State Hay, he sent a long summary of alleged facts supporting his denial of the existence of plague, after having made, as he said, an exhaustive investigation, in the course of which he did not consult any member of the local Department of Health or of the Marine Hospital Service, or any of their records. This telegram was concurred in and carried the signatures of the presidents of two private schools of medicine and several prominent merchants and bankers.

This telegram was the last straw for Doctor Bazet, member of the State Board of Health, and he resigned. The Gov-

ernor appointed in his place the President of one of the colleges, as before mentioned. After arbitrarily removing Doctor Henderson of Sacramento, he had a Board of Health, the personnel of which in the majority, coincided with him in his opinions. About the same time, Doctor Ryfkogel, bacteriologist for the State Board, was removed following a plague report by him.

Two men rated as bacteriologists and who were unable to find evidence of plague, were found and one was employed by the State Board of Health and the other by the attorneys for the Chinese.

The Governor's message in January, 1901, devoted a great deal of space to the plague question. He reviewed in a vitriolic manner the course of events relating to the plague controversy, referring to "the recklessness of certain city officials of San Francisco, assisted by a federal officer, one Doctor Kinyoun," as being responsible for the "fearful shadow cast upon the state." The following choice quotation is extracted: "Could it have been possible that some dead body of a Chinaman had innocently, or otherwise, received a post mortem inoculation in a lymphatic region by someone possessing the imported plague bacilli, and that honest people were thereby deluded?" and further—"assuming that we are justified in believing that the false reports of the plague which were temporarily credited at Washington, in other states and in foreign countries, were innocently circulated, may we not have cause to think that in certain instances, when prosecuting scientific investigations within this State, with all sorts of slides, cultures, etc., for the purpose of discovery and comparison, some investigator innocently caused slides and cultures containing genuine imported bacilli to be accidentally mixed with or substituted for harmless slides and cultures, prepared from human suspects, and in that way the medical departments in Washington

as well as in this State were deceived and induced to foster the false reports?"

The Governor recommended that it be made a felony, punishable by life imprisonment, to import plague bacilli, plague cultures or plague slides, without written authority from the State Board of Health, and the same penalty was to attach to any person within the state who should develop plague cultures or make

slides from any plague case within the state. Another suggestion was that it should be made a felony for any person, board or corporation to write or publish the existence of plague within the state unless the State Board of Health had first determined such to be the fact and had duly entered the record at length on its minutes. It is to the credit of the Legislature that none of these bills were



passed. As an example of newspaper animosity, an evening paper of June 16, 1900, contained an editorial in large type headed "These men are marked," in which the names of the Board, Dr. J. M. Williamson, President, and Doctors Baum, Bazet, McCarthy, and Vincent Buckley were emblazoned across the page in heavy faced 18 point Gothic. I quote one paragraph:

"The Board will be known in municipal political history as the Bubonic Board. There will never be any difficulty in distinguishing or designating it from any of the former or subsequent sanitary commissions of this municipality, but the individuals who compose it should be made to stand forth as the perpetrators of the greatest crime that has ever been committed against the city."

These men are indeed marked; marked as men of sterling integrity, as men who had the courage of their convictions and who stood steadfast against the most virulent combination of falsehood and personal attack that probably ever was endured by any Board of Health before or since. They were attacked by editors, supervisors, mayors, governors, judges of the Federal Courts and by their fellow citizens. They served without pay and suffered loss of practice and prestige. They were overwhelmed temporarily with a cloud of suspicion, distrust and positive hate that was almost universal in the community, but they withstood both threats and bribes. Their names should be indelible in the annals of public health and to them should be added that of Dr. Kinyoun, the Federal Quarantine Officer of the time.

Under weight of the powerful political attack upon Dr. Kinyoun, the Surgeon General engaged the services of a special commission composed of Doctors F. G. Novy, L. F. Barker and Simon Flexner. Upon their arrival in the state late in June, 1901, the Governor wired a message of protest to the President of the United States in which he stated that the

commission was about to commence investigations "ignoring the state authorities in the matter and proceeding in line with reports heretofore made by Dr. J. J. Kinyoun to the Surgeon General of the Marine Hospital Service." The Governor hoped that there had been "no intentional discourtesy on the part of the officer directed by the Treasury Department to supervise this investigation." The Secretary of the Treasury replied to this message assuring the Governor that no discourtesy was intended and expressed the desire of the department that the commission should make its investigations in its own way "unhampered by detailed instructions from the Public Health and Marine Hospital Service or any other influence."

Immediately upon receipt of this reply from the Secretary of the Treasury the bills intended to throttle the Commission in its work and also to hamper local health departments were introduced into the legislature. It is an ill wind that blows nobody good and one of the bills that happened to have merit was passed and is now in the Political Code of this state. This is Paragraph 2979a, which gives valuable and far-reaching powers to the State Board of Health.

The special commission sent by the Surgeon General was fortunate in observing six cases of plague within a few days and their report was submitted on February 28, 1901. This report, of course, settled the matter even in the minds of those doctors who had heretofore been sceptical of the findings of local bacteriologists and the campaign of abuse in the newspapers ceased rapidly, but no acknowledgment of error was ever made by any of these newspapers and all news concerning plague was suppressed. This attitude on the part of the San Francisco papers is still maintained.

The Governor, doubtless, feeling obliged to recognize in some manner the turn in affairs and desiring to present the appearance of coöperation with the Fed-

eral Government in eradivative measures that were plainly inevitable, sent to Washington a "special health commission" of five members composed of three newspaper editors, an attorney for the Southern Pacific Railroad and a prominent shipbuilder. This committee on its return published a report. As President Williamson of the local Board said in his annual report for 1902: "The purpose of the report is palpably one of deception. Its contents add nothing whatever to scientific information and contribute still less to veracity." This document, although supposed to be the report of a commission sent to Washington to assure the President and the Surgeon General that California would coöperate in the eradication of plague, was mostly taken up with matter intended to justify the Governor in his previous course. It reproduces many telegrams that passed between the Executive and the Departments of State and of the Treasury in Washington, eulogies of the Governor by the Commission and a "report" of the State Board of Health. It is interesting to note that in the account of coöperative cleaning up measures in Chinatown that were carried on under Surgeon J. H. White, the boast is made that Dr. White's advice was disregarded and 30,000,000 cubic feet of space fumigated with three hundred pounds of sulphur! instead of with thirty tons, thereby effecting a great saving to the State.

The Secretary of the State Board of Health, in a letter to the Governor, which is reproduced in this report of the Commission, says: "At the conclusion of the work, as thorough and as searching as it could possibly be made, no case of bubonic plague was found nor was any indication of its having been there discovered. If plague had existed in San Francisco just prior to this sanitary investigation it would have been there during the months of April, May and June because no efforts had been made to suppress it and no precautions taken to prevent its spread. It is safe, therefore, to

say that the evil reports of the presence of that disease in San Francisco were based upon error in diagnosis upon the part of incompetent investigators. We take great pleasure in assuring you that plague does not exist in San Francisco and that it never has had lodgment there nor elsewhere in California."

Bear in mind that this was written six months after the work of Doctors Flexner, Barker and Novy. The State Board of Health which had been engaged in cleaning up Chinatown in coöperation with the City Board, ceased work in June, 1902. Doctor White left for Washington soon after and the situation settled down to a struggle of the local board with insufficient funds, the State Board denying the existence of plague and the newspapers suppressing all facts.

Recollection of these experiences with the press prompts the query in one's mind, Are these things possible today? Let me quote from the Los Angeles *Times* of June 20, 1920, a paragraph from an article by one Harry Ellington Brook, N. D. (whatever that stands for):

"A few cases of bubonic plague appeared recently at Vera Cruz. Such cases still appear occasionally in tropical countries, where filthy conditions prevail. Bubonic plague, typhus and smallpox are filth diseases. Under improved sanitary conditions smallpox would be as rare as bubonic plague, had it not been kept alive by vaccination. There is no more danger of bubonic plague becoming epidemic in a climate like that of California, where people are cleanly, than there is of seeing cactus sprouting on cement sidewalks."

There are few diseases concerning which we have such exact knowledge of the cause, mode of spread and method of control as we have of plague, and none that are easier of control given the necessary financial support. The message I would carry to the ears of government, national, state and municipal authorities, were it possible to do so, would be: Wage a relentless warfare against the rat

in all the seaports of this country regardless of whether or not plague has yet appeared. Accompany this with laboratory examinations of rats so as to know the exact moment plague appears and to have information of the progress of the epizootic among them when it does appear; and finally, enforce rat-proof construction, particularly of wharves and warehouses. Plague usually travels in ships. It enters new territory by way of the seaports. The outposts of defence must be here located.

The problem of plague among the squirrels of California is enormous. It can be eradicated from among them, but it never will be at the present rate of work by the state and federal authorities. With plague present in five seaports and in four states at the present moment, the sooner the situation is realized and met by Congress and the Legislature of the State with an appropriation of a million dollars at the very least, the sooner will the spectre of bubonic plague vanish from our midst.

報日西中

CHUNG SAI YAT PO

A CHINESE DAILY.

PUBLISHED AT 804 SACRAMENTO STREET,
SAN FRANCISCO, CALIFORNIA.

VOL. 1 NO. 109

FRIDAY, JUNE 22, 1900

PER YEAR \$ 6.00

PUBLISHED BY THE CHUNG SAI YAT PO PUB. CO.

Entered at the Post Office at San Francisco, Cal. as Second Class Matter, April 1, 1900.

日七廿月五年六十二緒光

五拜禮號九零百一第紙聞新

美國新聞



圖醫狼捉擬

METHODS OF PLAGUE CONTROL

FRIENCH SIMPSON,

Surgeon, United States Public Health Service, San Francisco Quarantine Station,
Angel Island, Cal.

Read before General Sessions, American Public Health Association, September 15, 1920, at San Francisco, Cal.

If we are economically and efficiently to ward off plague we must rid ourselves of the rat. This demands coördination of effort, management, organization and funds. Rat destruction and rat-proofing are preventive measures that fortunately do not involve financial loss, while they will eliminate the dangerous rodent from the homes and environment of men.

MEDICAL knowledge of plague contained no rational measures of control until the year 1903, when the relationship between the rat and the disease was officially recognized and generally accepted. Here began the real advance in our knowledge of control, and when later, in 1908, the Indian Plague Commission found the rat flea to be the infective agent, this Commission was able to establish the following important facts: that bubonic plague is primarily a disease of rodents, transported by the rat and transmitted by the flea; that the disease is rarely transmitted in any other manner; that there is a seasonal increase in fleas, and that this increase is followed by an increase in rodent plague; that at a temperature above 85° F. fleas cease to multiply and that the infective micro-organism disappears from their bodies. Hence, epidemics are seasonal in occurrence, are confined to warm latitudes and decline when the temperature rises above 85° F.

These statements are now generally accepted as facts and form the foundation of modern methods of control; but before describing the manner of application, it seems essential that brief mention be made of the rodents and fleas encountered in plague control work in this country. In California, plague is confined to a small endemic focus among the ground-squirrels. The flea found infesting these

animals and their burrows is usually present in great numbers, and the ground-squirrel appears to be its selective host. It readily bites man.

The three plague rats of the United States with which we are concerned, are the Norway, or *Mus Norvegicus*; the Alexandrian rat, or *Mus Alexandrinus*, and the Indian black rat, or *Mus rattus*. All are flea-ridden, all are semidomesticated, and all litter continuously throughout the year. All are homed in our seaports and under normal conditions all will be found occupying the same premises—the Norway in the ground under floors, *rattus* and *Alexandrinus* in the walls and on upper floors.

The Norway determines this division of quarters. He is a burrowing rat, and demands the ground for harborage and purposes of propagation, and, being the largest and strongest, he drives the associated species to upper floors. The Norway rat is but rarely found on shipboard, and then only as an accidental traveler. The absence of ground prevents burrowing and propagation, and he suffers extermination. On shore he is a migrant, capable of traveling many blocks in a single night; many miles in a few days. Unrestrained in his normal habitat, the ground, he flourishes and exceeds, in numbers the associated species. Both Alexandrian and black rats are world travelers; they are common both on ships

and on shore, finding in either case a satisfactory home between walls, in enclosed spaces, in cargo and in merchandise, where, if allowed to remain undisturbed, they will breed and multiply. On ships the *Alexandrinus* generally predominates over the *rattus*. Both are trap-shy, cunning and remarkable climbers.

These rats are the selective hosts of two varieties of fleas, *X. Cheopis* and *C. fasciatus*. The former, *Cheopis*, is the common flea of India. Both transmit plague, are subject to seasonal increase, and apparently prefer to confine their activities to the rodent host. When the rat is no longer available, they seek and readily bite man. They require mammalian blood for propagation, but eggs are laid away from the host preferably in rat-nests.

This brief reference to the bionomics of rats and fleas as related to bubonic plague indicates clearly that man is a negligible factor; that control of the disease demands fundamentally the elimination of rats and fleas in ships and on shore.

In modern practice, plague control measures on vessels are applied continuously for the prevention of the introduction of disease; whereas, on shore, control measures constitute a brief, costly and intensive process, applied systematically only after the appearance of the disease at the point of invasion, and abandoned as soon after its disappearance as circumstances will permit.

PLAGUE CONTROL ON VESSELS

In 1908, Eager collected all available statistics covering the occurrence of cases of human plague reported on ships, from the incidence of the present pandemic in 1894, up to and including the year 1907. He found that in 13 years a total of 140 vessels had reported human plague aboard, with a total of 229 cases and 122 deaths. One hundred and twenty-six of these vessels were steam-propelled.

Intermittent statistics through the years following indicate that ship infec-

tion continues to be reported in about the same yearly proportion. In 1919, 13 vessels reported plague aboard; in 1912, 15 vessels; in 1916, four vessels; in 1917, three vessels. From April, 1919, to the present year and month, August, 1920, 11 vessels, all steam-propelled, have reported plague, with a total of 46 cases and 12 deaths.

The cases above reported were all human cases, but in the light of present knowledge and experience, it can be reasonably assumed that contact with rat-plague was the source of origin, and that infection probably occurred aboard ship.

With plague now abroad in some port or place in practically every important maritime country, and with vessels from these ports in daily contact with the wharves of innumerable American cities, it is remarkable that the invasion of our ports has not occurred with greater frequency. Freedom is due, no doubt, to the control imposed through National Quarantine operations. National Quarantine is a federal measure of plague control, under the direction of the Public Health Service. It is enforced under national statutes and regulations, and is applied and in daily operation in every port of entry to the United States.

In connection with plague control, its effects are brought to bear on vessels at three distinct points: first, before the vessel departs; second, while en route, and, third, on arrival in the United States.

Before departure from any foreign port, the master of any vessel destined for the United States must first obtain from the American consul in that port a bill of health. This document becomes a part of the ship's papers, and over the signature of the consul sets forth the sanitary conditions of the port relative to plague or other quarantinable disease. If plague is present, the vessel is required to fumigate before departure, breast-off from the wharf and maintain rat-guards on all mooring lines; cargo, if

capable of harboring rats and fleas, must be certified as rat-free. In addition, the bill, contains other sanitary information relating to the vessel, personnel and cargo, and the document is of great importance in establishing the sanitary status of the vessel on arrival. In addition to these protective measures, whenever epidemic disease of a quarantinable nature is present in a foreign port with which we have commercial relations, it is the general practice to detail a medical officer of the Service to such port to observe and report the status of such disease in its relation to shipping, and this information is furnished quarantine officers in home ports.

During the voyage, all cases of illness and death are required to be recorded, and, accompanied by the clinical records, constitute a part of the ship's papers. Such records are of great importance in determining the health status of the vessel on arrival.

On arrival in the United States, vessels from any foreign port or place, before entry, must first submit to medical inspection. Medical officers are continuously on duty in every port of entry the purpose of conducting this inspection, which includes examination of the ship's papers, the medical inspection of passengers and crew, and, if required, a sanitary inspection of the compartments of the vessel. After a consideration of these sources of information, decision is made as to fumigation, which is required under the following circumstances:

Vessels from ports plague-infected or suspected of plague infection, are required to fumigate at the end of each voyage to the United States, such fumigation to be applied before entry, if there is plague or suspicion of plague aboard, and after entry and discharge of cargo, if the vessel presents a clean bill of health. All other vessels are required to fumigate periodically, at the end of each six-month period.

Quarantine then is that measure of control used to prevent plague entrance, and chief reliance is placed upon the fumigation of the vessel for the destruction of rats and fleas.

The gaseous agents now employed for this purpose are sulphur dioxide and hydrocyanic acid. Sulphur dioxide is the more commonly and widely used of the two, and has been employed as a gaseous disinfectant since the eighteenth century. It is fatal to animal and insect life, but possesses inherent disadvantages which will not permit its routine use as a fumigant. It corrodes metal, bleaches dyestuffs, injures certain foods, endangers the vessel from fire and requires an exposure of from six to twelve hours to produce its maximum effects. In plague control work it is gradually being replaced by hydrocyanic acid gas. As a salt, hydrocyanic acid is widely used industrially, and, as a gas, has long been employed as an insecticide in the fruit industry. At New Orleans, in 1915, Creel and his assistants experimentally determined its practical value as a rat and flea destructant, standardized the quantities required, and initiated its employment as a routine ship fumigant. It is ideal for this purpose. It is rapidly fatal to animal and insect life; it is readily prepared aboard ship; is not injurious to metals, fabrics or food, and produces its effects within two hours' time. Because of the saving of ship's time, it is less costly than sulphur. After an experience of five years, it can be declared safe for ship and house fumigation, provided essential precautionary measures are rigidly observed.

After exposure of the vessel to one or the other of the above fumigants, all compartments are ventilated and the vessel searched for rats. Rats found dead are noted as to number, species and location in the vessel, and when laboratory facilities are available for the detection of rodent plague, they are sent to such laboratory for examination.

When the measures here outlined are consistently and periodically employed, few rats will be found infesting the vessel. These may be considered an irreducible minimum, and as infective material, so much diluted that the vessel may be declared safe as a plague risk.

PLAGUE CONTROL ON SHORE

Plague generally appears first in some seaport, and usually announces its presence through the death of some human victim. Then we find that, stealthily, it has already invaded the rat population. Should this invasion prove of limited extent, prompt, energetic measures may quickly stamp it out. But usually it is found that rodent disease has already extended over wide areas. Control then becomes an immense sanitary problem, requiring for its solution money, laws and men—men to operate an effective campaign of eradication; laws to enforce their requirements, and money to pay the cost. A sanitary campaign established upon these fundamental requirements must provide and include the following:

1. *Sanitary Director.* The services of a sanitarian, trained in plague eradication work, must be at once obtained; a conference held with state and municipal authorities, a plan of campaign agreed upon, and such director authorized to obtain medical personnel and proceed with the organization.

2. *Funds.* An appropriation must be made, immediately available, as credit against which may be charged salaries of employees and emergency purchases.

3. *Headquarters.* A suitable business establishment, preferably on the ground floor, must be selected, furnished, and a clerical force at once employed for the care of correspondence, reports and records which will rapidly accumulate.

4. *Laboratory.* A fully-equipped laboratory must be made immediately available, and placed under the direction of an accomplished bacteriologist, experienced in plague work.

5. *Laws.* An ordinance must be en-

acted and made immediately effective, defining specifically its purpose and directing in detail the methods of repair, construction and reconstruction of all buildings according to modern rat-proofing requirements. The garbage ordinance, if required, must be revised and strengthened.

6. *Courts.* The full coöperation of all city officials concerned in the administration of municipal or magistrate courts should be early obtained, and the need for full and immediate public compliance with all sanitary laws made clear.

7. *Press and Public.* Full and complete information relative to the occurrence of cases and the progress of the campaign should be officially reported to the press for daily publication. The public, through business organizations, civic and religious societies and like organizations, should receive the benefit of a general education campaign relating to the character of the disease, and the methods of control.

The above measures are all susceptible of rapid inauguration, and their effects may be made operative at the very incidence of the work. When completely effective, they will permit the rapid, systematic and intelligent handling of a campaign for plague eradication.

The measures requiring immediate application are those essential to the prevention of further human cases. They include, 1, notification of the occurrence of human cases; 2, inspection of the dead; 3, immediate destruction of recognized foci of rat plague.

The notification of the cases of plague, and the inspection of the dead, provide information as to residence and place of employment, and generally supply the earliest information as to location of plague foci. This permits the immediate and complete destruction of rats at that focus, and prevents further cases. For this purpose there should be employed two organizations, known as flying squads—a fumigation squad and a

wrecking squad. Both should be provided truck transportation facilities and should be composed of trained, dependable men. The fumigation squad should be supplied with all materials necessary to prepare and fumigate a building with hydrocyanic acid gas. The wrecking squad should be furnished pulicides, spray-pumps and utensils, for the spraying of yards, lots and other open areas, for the destruction of fleas; and tools and implements for use in removing floors, rubbish and debris, in the destruction of rat harbors. These measures, employed at known or suspected foci of plague, are of great importance in preventing the spread of rat plague and the further occurrence of human plague.

In addition, and as rapidly as the facilities incident to organization will permit, these measures must be followed by trapping operations for the detection of unrecognized rat-plague, and by rat-proofing, for the elimination of rats and the prevention of the return of the disease.

Trapping. Following close upon the employment of the flying squads, there should be placed in the field an extensive trapping organization, composed of carefully selected, steady, reliable men. They should be supplied with 20-inch wire cage-traps, for the capture of live rodents, but chief reliance should be placed upon the "official" snap-trap, baited with bread or bacon. These men should receive, in addition to salary, a bounty on rats trapped, and to encourage and insure the accurate and careful tagging of rats as to location where caught, they should be paid a "bonus" of \$5.00 for every correctly tagged plague rat captured.

This trapping force should be systematically spread out over and beyond the area suspected of rodent infection, and all rats trapped should be forwarded daily to the laboratory for examination. The value of systematic trapping must not be underestimated. It reduces the rat population and furnishes information as to its extent. It permits the collection

of fleas, and it is the only reliable means we possess for the early detection and delimitation of rodent plague-foci, and through this information it permits the application of intensive destructive measures at the point of infection, and this materially aids in the control of the disease.

Rat-proofing. To sustain life, rats require two things, food and harborage. It therefore follows that the protection of foodstuffs and the removal of harborage will eliminate rats.

This can be effected through the application of the following measures:

1. By the construction or reconstruction of all buildings in a rat-proof manner.
2. By removal of all materials covering yards, sidewalks and passageways which will permit rat refuge.
3. By the protection or removal of all garbage and waste food.

While simple as to direction, the complete and thorough application of these measures, when necessary in an extensive community, will require the unremitting and painstaking efforts of a corps of trained sanitary inspectors, many months of work, and vast expenditures of funds.

Happily, these measures are all economic—the costly reconstruction required improves and adds value to the structure, and when effectively applied will eliminate the rat from the home and environment of man, and prevent any possible return of bubonic plague.

AUTHORITIES CONSULTED

Reports on Plague Investigations in India, 1908, *Journal of Hygiene*.

Report of International Plague Conference, Mukden, 1912.

Early History of Quarantine, Eager, 1903.

The Present Pandemic of Plague, Eager, 1908.

Bionomics of Rodent and Human Fleas, Mitzmain, 1910.

Maritime Quarantine, Cofer, 1910.

Bubonic Plague, Creel, 1914.

Extension of Plague of the Bubonic Type, Creel, 1916.

Outbreak and Suppression of Plague in Porto Rico, Creel, 1913.

Hydrocyanic Acid Gas, Creel, Faget & Wrightson, 1915.

Cyanide Gas for the Destruction of Insects, Creel and Faget, 1916.



PUBLIC HEALTH NURSING

Some illustrations of the different fields of public health nursing are here presented through the courtesy of the National Organization* which illustrate to some extent how widely the efforts of such associations are distributed. The red man and the negro represent distant sections of the country and the nurse is active in both. She is giving attention to the baby in the tent of the Shoshone In-



dians or establishing bettered oral conditions among the negroes in Louisiana. These efforts assure for the future far more healthful conditions for both these races, sadly neglected till the new lights in health administration were established. The ubiquitous nurse she should be termed. Here she is in the home during the raging of the influenza taking suggestions from the doctor as he hurries away on his route of many calls and there she is at work in her school duties, aiding the school



medical inspector in his enormously important work among the young people over whom the municipality exercises close watch, and who thereby are safeguarded to an extent not generally appreciated.



One of the striking means whereby this organization has sought to impress on the people the value of its work and of nursing in general, has been by means of a film, "An Equal Chance." The moral of the "movie pictures" of course does not need to be expressed in words, for its mission in emphasizing the need of more nurses is self-evident. Such carefully prepared evidence is its own proof, and the community should be brought to realize as quickly as possibly the potentialities of public health nursing.



*National Organization for Public Health Nursing, No. 156 Fifth Avenue, New York City.

DIAGNOSIS AND DETECTION OF RODENT PLAGUE

C. L. WILLIAMS,

*Passed Assistant Surgeon, U. S. Public Health Service,
New Orleans, La.*

Read before General Session, American Public Health Association, at San Francisco, Cal.,
September 15, 1920.

Stories of his own observations by one who has had experience are the most valuable kind of lessons. This authority places before his readers details of the diagnosis of plague and practical laboratory methods. He outlines the essential features of technique and determination clearly and accurately and has here really a preparatory course in plague detection that it is not easy to get from books.

THE paper here presented deals principally with the signs of plague as they occur in rats and guinea pigs and the laboratory procedure employed in their detection and confirmation.

IMPORTANCE OF THE LABORATORY

In an eradication campaign, a laboratory probably is not an essential, but it aids so materially in the successful operation of such a campaign that it has come to be regarded as a necessity. While the laboratory has no direct hand in the actual destruction of rats, it has a very marked influence upon the destruction of plague-infected rats and is the only factor that sheds any trustworthy and sustained light upon the course of the epizootic. While an expensive feature, the information supplied is probably worth many times the cost, particularly the demonstration of the presence or absence of infection and the location of foci.

Briefly the laboratory gives information on the following points, the relationship of which to eradicate measures must be fairly clear:

Demonstration of presence of plague.

Intensity of the infection.

Delineation of infected area.

Location of foci.

Efficacy of eradication measures both general and at specific foci.

Amount and variations in flea infestation.

Absence of infection.

Upon the demonstration of the presence of plague depends the institution of eradication measures. If the infection is severe, intensive eradication measures must be applied as rapidly and completely as possible; if light, time may be safely taken for the organization of a smaller but more efficient and less expensive force, a contrast of conditions recently illustrated in Beaumont and Galveston, Texas. Delineation of the infected area enables the concentration of eradication efforts within it, though trapping must to some extent be maintained in all parts of the community in order to detect at once any spread. Location of foci concentrates intensive measures such as fumigation at these points, the efficacy of which measures are determined in the laboratory by examination of rats captured at these foci subsequent to treatment. General efficiency of the campaign may be shown in the rapid decline in the percentage of infected animals. Amount and variations of flea infestation indicate what may be expected as to the severity of an epizootic; increases in the flea count give advance warning of increase in the percentage of infected rats.

Probably the most important function

of the laboratory is to set a place in time for the last infected rat discovered. From this point is computed the end of the campaign as successfully completed. It is information that can be gained from no other source and is the only information of this nature even approaching accuracy. Human cases are poor guides for in New Orleans during the first epizootic infected rats were diagnosed in the laboratory for more than one year after the last human case. Past experience in other eradication campaigns is no better guide than human cases for in San Francisco the last infected rat was found eleven months after the inception of the campaign, while in San Juan, Porto Rico, this period was only three months, and in New Orleans very nearly three years.

ROUTINE LABORATORY PROCEDURE

All rats should be immersed in kerosene oil by the trapper, for the purpose of killing fleas, before being brought to the laboratory. Each rat should have a tag attached giving the address where secured, the date and a statement as to whether the rodent was trapped, found dead or killed by fumigation.

Where less than 300 rats a day are brought in there should be no difficulty in examining them at once upon arrival. Where the numbers are large, or they are brought in at a late hour, it becomes necessary to place them on ice over night.

The laboratory should be equipped with at least one long narrow table covered with sheet metal. At one end of this the rats are dumped out of the cans and an attendant sorts them and calls off the address and species to another attendant who records these in a book giving each rat a serial number. The rats are passed along the table to the tackers who tack each to a shingle, belly up, using magnetic hammers and putting the tacks through the paws. They are then passed on to dissectors who reflect the skin over the entire ventral surface,

exposing neck, axillæ and groins, and thoroughly open the abdomen without, however, disturbing the chest. Six to eight-inch mouse-tooth forceps and six to eight-inch scissors with short blades are the most convenient instruments for dissecting.

Finally the rats reach the examiners at the far end of the table, who carefully inspect each rat and open the chest to determine the presence of pleural effusion. For this inspection a bright light is essential. Where daylight is relied upon it is best obtained through a skylight. The writer prefers electric drop lights properly shaded and placed on the table directly above the rats as being more reliable and supplying a light of constant intensity.

The great majority of rats are so evidently negative that they can be discarded after careful scrutiny. Those without injection in which the liver and spleen appear normal are very rarely infected. About ten per cent, however, as a rule, will suggest plague and must be more minutely examined. About half of these will be seen to be negative on more careful inspection and can be thrown out. The remainder are placed on a separate table, smears made from each and examined. These rats are finally divided into "plague infected," "suspicious" and "negative." Tissues from suspicious ones are inoculated into guinea pigs for confirmation, the negative are thrown out, the positive and suspicious are finally recorded and burned. Negative rats are knocked off the shingles and disposed of by incineration or burial. The shingles are continued in use. Special form cards should be used for records of the infected and suspicious rats and inoculated guinea pigs.

Guinea pigs may be inoculated cutaneously, subcutaneously, or intraperitoneally. The first is the most used but is likely to be ineffective when only a few plague bacilli are present so that suspected resolving cases and cases

where only a few *B. pestis* are believed to be present should be reserved for the subcutaneous method. Intraperitoneal injection should be confined to material from human cases which is seldom contaminated. In such cases it gives results in two days, but it cannot be relied upon when the inoculated material is highly contaminated, as is generally the case with rat tissues.

For a cutaneous inoculation the animal is shaved without soap or water over an area about $\frac{3}{4}$ inch square, shaving being maintained until the surface is moderately abraded. Over this area the material for inoculation is smeared and rubbed in with some blunt instrument. Very few organisms besides plague will produce systemic infection through such a surface so that this method seems to filter out contaminating bacteria.

Subcutaneous inoculation may be performed either with a syringe or by the "pocket" method. For inoculation with a syringe the suspected tissues must first be ground in a small mortar, and emulsified in salt solution. The pocket inoculation is accomplished by cutting a slit through the skin, separating the subcutaneous tissues with the handle of a scalpel and tucking a piece of tissue into the pocket so formed. Either method is satisfactory. Intraperitoneal inoculations must of course be done with a syringe.

Inoculated guinea pigs are placed in small-sized garbage cans with a layer of vaseline smeared inside near the top to prevent exit of fleas. They are kept thus ten days, when if alive and healthy they are marked negative and may be returned to stock and used again. If found sick or with buboes at the expiration of ten days, they are killed and examined. Plague-infected guinea pigs usually die in five or six days. When dead they are tacked to shingles and examined in the same manner as are rats.

Smears are made from the liver and spleen in all suspicious cases and from buboes, abscesses or other special lesions when present. They are best stained with carbol thionin, a good formula being:

Stock A.

Carbol thionin (Gruebler) 2 grams
95% Alcohol 100 cc.

Stock B.

Liquid carbolic acid 2 cc.
Distilled water 100 cc.

For use mix 25 cc. of stock A with 100 cc. of B.

This stains in ten seconds or less, and does not appreciably overstain. It is regretted that all American thionin so far used by the writer has been very unsatisfactory. Ten grammes of the American stain must be used in stock A solution. Lacking good thionin, methylene blue is probably the next best stain in general use.

PROTECTION OF WORKERS

For protection reasonable care in handling is safer than any mechanical means. Laboratory infections are rare, but have occurred in a few instances. Rubber gloves may be worn though they are soon ruined by the oil on the rats. Jars of disinfectant should be always at hand as well as strong carbolic acid and iodine for treatment of cuts and scratches. Vaccination probably gives some protection for a few months, although reports on its use are conflicting. In New Orleans it is very little used.

LABORATORY ERROR

When large numbers of rats must be dissected daily, it is impossible to use separate instruments on each rat. Of necessity occasionally infection will be carried over into negative rats, which rats in some instances may show lesions rousing sufficient suspicion to cause inoculation of guinea pigs. The error may be minimized by training the dissectors to recognize the signs of plague, and requiring them to change to sterile instruments after dissecting a suspicious

animal. In practice, the error is a small one as is shown by the close checking of inoculation results in guinea pigs with the signs of plague in rats.

DIAGNOSIS

The diagnosis of infected rats are in the last analysis based upon a demonstration of the presence of *Bacillus pestis*, although in actual practice many cases are declared positive after a review of the gross lesions only. There is always a slight margin of error in basing conclusions on gross lesions so that the first case in a community must be completely confirmed by the isolation of the causative organism and the study of its characteristics, including practically the carrying out of Koch's postulates. Having confirmed the presence of *B. pestis* in the first rodent case many of the subsequent ones may be safely diagnosed from gross lesions, the percentage of error being too small to be of practical importance, particularly in these instances when borne out as is nearly always the case, by the appearance in smears of organisms with the characteristic morphology of the plague bacillus. When infected rats become few in numbers, and the prospect of seeing the last one appears, it becomes important that full confirmation be secured in each case so that the continued presence of the infection may be indisputably proven.

It must not be supposed from the above that all rats during the height of an epizootic are diagnosed only on gross lesions. Far from it. About fifty per cent of plague rats will show indefinite lesions, which must be confirmed, while a very large number of rats not infected show signs that raise suspicion of plague which can only be set at rest by the negative results of animal tests.

GROSS LESIONS OF ACUTE PLAGUE IN RATS

The cardinal or major signs of acute plague are five in number: injection, bubo, granular liver, large dark spleen and pleural effusion. It is rare that all

occur in any one rat, and equally rare that any of them appears alone. Usually, two, three, or four are found in combination. These signs are characteristic of plague, and occur in other conditions with such exceeding rarity that most workers in this field are inclined to agree with the Indian Plague Commission that a well-marked case may be safely diagnosed even when culture and animal test are negative. The writer is inclined to include the appearance of organisms of the typical plague morphology in smears as the sixth cardinal sign of plague, although towards the end of a campaign it assumes considerably more importance than this, as will be discussed.

Injection: This is the most constant of all the plague signs, occurring as moderate, marked, or intense in about 75% of all acute plague-infected rats. It is the most readily noted and when marked and of the proper color is an almost certain index of plague. Characteristically, the injection is evidently acute and of the entire body; skin, muscles, and viscera, though it is best seen against the back ground of the skin, where it assumes a distinctly purplish hue. It is usually associated with an increased amount of fluid in all the tissues so that the reflected skin surface is wet and glistening, the muscles develop a peculiar pink, waxy translucency, and on the inner chest wall beneath the sternum usually appears an area of gelatinous edema. The injection appears in all sizes of vessels but is particularly marked in the long vessels lying in the subcutaneous tissue from the axilla almost to the groin on either side. As a rule it is fairly evenly distributed, in a few cases only being confined to particular regions, as the shoulders, groin or to one side only. It is usual for it to be more pronounced about a bubo.

Bright red infections, old-appearing congestions often associated with thickening of the tissues, and injections con-

finer to the smaller vessels are seldom due to plague. The experienced eye differentiates these at once, though one untrained is apt to regard many of them as suspicious.

Buboes: These unique plague lesions occur among rats in no other known naturally-contracted disease. Among guinea pigs *B. pseudo tuberculosis rodentum*, and among guinea pigs and ground squirrels *B. tularensis* cause buboes, but these organisms have never been found in naturally-infected rats. Occasionally, necrotic lymph glands, usually with tough capsules and more or less liquid contents, occur which are not due to plague, but the writer after examining over half a million rats cannot recall ever having seen a typical bubo in one that was not plague-infected.

The characteristic bubo consists of one or two, rarely more, enlarged caseous or partly caseous lymph glands buried in inflammatory connective tissue, or else surrounded by acutely congested gelatinous edema. The mass is usually firm, may be hemorrhagic, and is nearly always the center of an area of marked injection. It is seldom larger than 1 cm. by .5 cm. The caseous material is not liquid but soft, rather dry, and easily broken up. Early or beginning buboes may not be distinctly caseous and may lack the surrounding tissue coat but are generally in the center of marked injection, are of a cream white opaque appearance, and, on section, exude a semi-purulent fluid as a rule rich in plague bacilli. They cannot be classed as "typical," though frequently unmistakable to the trained eye.

Enlarged congested glands frequently occur in plague rats, but also frequently occur in negative ones. They are not classed as buboes. Large lymph glands are frequently seen in rats, particularly the older ones; they seldom show any injection, are tough, and dull gray in color. Usually in such cases the glands are large in all the regions where lymph

nodes are found. Occasionally in rat leprosy one finds large, very soft, semi-necrotic, hemorrhagic glands. They are apt to be associated with ulcers, lack the firmness of the plague bubo and appear in a mass of soft, evenly hemorrhagic tissue, probably best described as messy. The hemorrhage about a plague bubo is splotchy.

Buboes should be looked for at the sites of the various lymph nodes. These are principally the ventral aspect of the neck, the axillæ, the groins, and the lumbar region. In the neck they are arranged as a deep crescent arching over the two large submaxillary glands; in the axillæ they are covered by the pectoral muscles, which must be cut to expose them; in the groins they appear as a string of glands and are generally reflected with the skin; in the lumbar region they are found as two long narrow glands with a few smaller ones lying along either side of the aorta, just opposite its bifurcation.

The distribution of buboes in these various locations has varied very considerably in different parts of the world. Mesenteric buboes, however, have occurred with extreme scarcity in naturally-infected rats, according to all published reports. In India, 75% of all rats with single buboes had them in the neck, while in San Francisco 75% of such rats had buboes in the groins. The New Orleans figures for the present epizootic stand half way between these, cervical buboes occurring in 28%, axillary in 23%, inguinal in 43%, and pelvic in 6%. These contrasts are brought out in Table I.

TABLE I

Showing rats with single buboes and contrasting the locations of these in India, San Francisco and New Orleans

	Neck Percent	Axilla Percent	Groin Percent	Pelvis Percent
Indian Plague Commission, 2,923 rats	75	15	6	4
*San Francisco, 40 rats	2	20	73	5
New Orleans, 111 rats	28	23	43	6

*Combined figures of Wherry, Walker and Howell and the Federal Laboratory.

In India, of rats with multiple buboes, 54.5% had one in the neck. In San Francisco neck buboes were rarely seen in such cases; in New Orleans of 34 rats with multiple buboes every one had an inguinal; 20 had an axillary and 7 a cervical bubo.

Again the proportion of infected rats showing buboes has varied. In India 85% had them, in San Francisco 40%, in New Orleans 33%.

These variations are difficult to explain. Possibly they are connected with variations of climate, but more likely with a difference in fleas. In India the prevailing flea is the *Lamopsylla cheopis*, in San Francisco the *Ceratophthalmus fasciatus*; in New Orleans the *Cheopis* markedly predominates, but was rarely found in such numbers as occur in India. Further, in New Orleans a relatively considerable percentage of *Ctenopsylla musculi* are found on rats.

It might be thought that the difference in species of rats might account for it, but this is not the case, judging from the rather limited New Orleans figures. Here the percentage of *rattus* and *Alexandrinus* with buboes was less than the total for all acutely-infected rats, being only 25% of 220 rats, while of the Norway species 42% had buboes. Among 50 *rattus* and *Alexandrinus* with single buboes the distribution was neck 38%, axilla 22%, groin 38%, pelvis 2%, these figures being only slightly higher for the neck than those in all rats with single buboes. (Table I.)

Granular liver: This important but elusive sign is apt to present more difficulty in its detection than any other, so that were it not for the fact that usually other conditions of the liver first draw attention, and that it is in the great majority of cases associated with other plague signs, many times it would be missed. The difficulty is in seeing the granules, for while they are often quite plain, they are oftener obscure and being small in size can frequently only defi-

nitely be made out in the brightest light. Fortunately, in a plague rat the liver whether granular or not is almost uniformly enlarged and presents a plump and rounded appearance which arrests attention at once, if attention has not already been centered by observation of injection, bubo, or other signs. In well-marked cases, the liver is frequently injected, pink in color, and shows, though in less degree, the waxy translucency seen in the muscles. It is firm and springy instead of flabby and tends to hold its shape. Granules occur more or less marked in about 60% to 70% of all acute cases.

The granules are of two varieties. Most often they are diffuse, yellowish, irregular in shape and size, approximately pinhead size granules varying in clearness from the obvious to so faint as to be almost indistinguishable. They give the organ frequently a finely-mottled rather than a granular appearance. The word diffuse is used in describing them in contradistinction to discrete, since close inspection shows that they are not sharply outlined but fade off into the surrounding tissue, not infrequently merging into one another. They may vary in numbers from a few to so many as to render the liver almost completely necrotic. Less often is seen a "peppered" sprinkling of very fine "pin point" white or gray granules requiring a bright light to distinguish them with certainty. When seen at all they are usually profusely scattered over the surface though in some cases they are recorded as few in number.

Typical granules are only occasionally simulated by other conditions. Sharply-marked granules and spotty markings of the liver generally few in number are not unusual in conditions other than plague, but one familiar with the granular liver of plague would find no difficulty in differentiating. It is well to bear in mind that plague granules almost never occur without acute enlargement

of the liver and are usually associated with other signs of plague.

Large dark spleen: As has been reported by several writers the size of the spleen in rats varies within wide limits so that it is difficult to say when one is enlarged. Probably, therefore, a better description would be to say "plump" dark spleen. The condition presented is a spleen which has rapidly swollen so that the capsule is too small, consequently the organ appears bulging with the edges rounded. Usually it is dark in color, differing distinctly from the red of normal spleens, is firm, friable, and may occasionally show granules, necrotic areas, hemorrhagic spots or other lesions. It appears in from 60 to 70% of acutely-infected rats according to different reports.

In rats killed in the early stages of plague the spleen is more apt to be moderately enlarged and bright pink or red in color, due to injection, the extravasation of blood in its tissue which produces the dark color not yet having occurred.

Pleural effusion: A clear, copious, serous, pleural effusion in a rat showing any other well-marked sign of plague practically clinches the diagnosis. When it occurs it is usually copious or moderate in amount. In the recent New Orleans series, it was found to be slight in only 47 of a total of 222 cases in which this sign was present. It is nearly always associated with other well-marked signs of plague; for example, in the above mentioned 222 cases 200 were associated with distinct injection and 154 with granular liver while only 13 were in rats recorded with only slight signs of plague.

Association of lesions: As mentioned previously, two or more of the lesions of plague usually occur in association. This is well shown in Table II where the occurrence of various lesions with injection is shown. This table also brings out the distinct increase in the

intensity and multiplication of lesions as the injection is found more intense.

TABLE II
Association of injection of various degrees with other lesions, among 441 acutely-infected rats, New Orleans, 1919-1920

	No. of rats in group	Percent showing				
		Well-marked Plague	Buboes	Gran. Liver	Pleural Effusion	Large dark spleen
No injection	49	30	8	40	10	27
Slight injection	60	58	5	55	30	58
Moderate injection	67	67	24	58	43	55
Marked injection	225	84	38	59	61	71
Intense injection	40	100	75	72	70	100

The writer can recall only one case where a bubo was the only sign of plague and not more than three or four where a typical granular liver was alone.

Relative occurrence of lesions: Table III shows the relative occurrence of different lesions as reported from Bombay, San Francisco and New Orleans.

TABLE III
Relative occurrence of acute lesions in Bombay, San Francisco and New Orleans

	Percent Showing				
	Injection	Bubo	Granular Liver	Large dark spleen	Pleural Effusion
Indian Plague Commission, Bombay, 4,000 rats	69	85	58	..	72
San Francisco, Wherry, Walker & Howell, 88 rats	59	14	14	68	71
Federal Laboratory, 62 rats	85	57	87	74	59
New Orleans, 441 rats	*75	33	58	61	50

*Slight injections omitted.

In this table the New Orleans figures would be higher throughout were the rats showing very slight or no signs of plague, some 50 or 60 in number, left out of consideration. These rats would have been missed had not guinea pigs been very extensively employed to weed out from the large number of similarly-marked but not infected rats.

Unusual signs in acute plague: The signs listed in Table IV are of infrequent occurrence. Many of these when not accompanied by evidence of an acute process are regarded as indicative of resolving plague. All in this table have

been recently seen in well-marked acute cases in New Orleans.

TABLE IV

Unusual lesions in acute plague, New Orleans, 1919-1920

Spleen:	
Profusely granular	5
Hemorrhagic granules	1
Large granules, 2 millimeter diam.	1
Hemorrhagic spots	3
Caseous spots with hemorrhagic areola.	1
Areas and zones of caseation	10
Almost entire spleen caseous	1
Recent adhesions	3
Ruptured	1
Recent scars	2
Very large spleen 2½ in. x ¾ in.	1
Liver:	
Areas of caseation	4
Single lobe entirely caseous	1
Abscess in axilla (apparently bubo)	1
Caseous spots in lungs	1

PLAGUE WITH SLIGHT SIGNS AND NO SIGNS

The discovery of plague-infected rats with slight or no signs of the disease depends principally on how accurate it is desired that the laboratory diagnosis should be. It is in most cases a weeding-out process through inoculation of guinea pigs from all slightly suspicious rats. Rats with no signs are usually regarded as suspicious on account of being captured at known highly-infected locations. In a few cases in New Orleans it was believed justifiable to record a positive diagnosis upon the appearance of typical *B. pestis* in smears from rats presenting no gross lesions, but killed by fumigation in company with numerous well-marked plague rats.

On account of the importance of the last few infected rats, the writer believes that toward the end of an eradication campaign smears should be made and examined, so far as practicable, from all rats brought to the laboratory. We have records of 17 plague-infected rats in the first New Orleans epizootic that were discovered by this means, none of which presented any of the gross lesions of plague and had all been passed as negative on naked eye examination by men highly trained in plague diagnosis.

Advanced putrefaction frequently obscures signs of plague. Such rats however are usually found dead and are given careful inspection, especially

smear examination, in consequence of being regarded with more suspicion than are trapped rats. They should not be considered as true "cases without signs" and are listed separately in Tables V and VI.

The writer believes that use of the large number of guinea pigs necessary to weed out many of these poorly marked rats is, during the period of relatively high infection, too great a price for their discovery, but that the search should be made more and more intensive as the proportion of infected rats decreases.

TABLE V

Infected rats with slight gross lesions of plague, showing various signs on which suspicion was principally based, New Orleans, 1919-1920

Most prominent sign—	No. of rats	No. of Susp. Smears
Injection	5	5
Injection only sign	1	0
Large congested liver	22	18
Waxy liver only sign	1	0
Pleural effusion	1	0
Putrid, some evidence of injection, etc.	6	6
Total	36	29

TABLE VI

Infected rats with no gross lesions of plague, New Orleans, 1919-1920

Basis of suspicion or diagnosis—	No. of rats
Putrid, inoculated account suspicious smears.	8
Putrid, from highly infected buildings, diagnosis based on smears	6
Good condition, from suspected locations, inoculated account suspicious smears	5
Good condition, from highly infected buildings, diagnosis based on smears	9
Total	28

RESOLVING PLAGUE

The role of resolving plague is as yet a matter of conjecture. Some writers express the possibility of it being a factor in the prolongation or recrudescence of an epizootic, though this is based at present mostly on negative evidence. It is interesting to note that no cases were found in San Francisco and only one in Porto Rico in both of which places the epizootic was relatively short, while on the other hand they have been rather numerous in New Orleans where the epizootic has exhibited extreme tenacity, both in general and at specific foci. On the other hand it has been observed in New Orleans that resolving cases in which living plague bacilli could be demonstrated, were definitely grouped near

acute plague foci, while cases with similar lesions but negative on guinea tests did not show any such marked grouping, suggesting that the bacilli are not long-lived in these rats, the positive ones still being near the point of infection while the negative, with a longer time interval, had largely migrated to other quarters.

The signs of resolving plague, as described by the Indian Plague Commission are principally various lesions of the spleen, caseous nodules, irregular caseous areas, zones of caseation through the entire substance of the organ, granules, abscesses, scars and adhesions; and abscesses at the site of old buboes. To these the writer would add from his own observations: transverse linear rupture of the spleen and the resultant transverse linear scar; discrete granules of the liver, few in number, without any acute sign, and moderate or slight pleural effusion without any other evidence of acute plague, as, in all probability evidence of resolution. The Indian Plague Commission makes the statement, with which the writer agrees, that similar lesions are caused by other diseases than plague, but it showed that among rats from plague-free locations these signs occurred in markedly fewer numbers than in infected communities.

The great majority of resolving cases cannot be confirmed by guinea pig or cultural test since in most instances the causative bacilli are gone. Hence the correctness of the diagnosis cannot usually be proven. In New Orleans 8.7% of all suspected resolving cases were shown to harbor virulent plague bacilli. Guinea pigs were always inoculated subcutaneously so that it is believed that very few positive cases were missed through failure to infect the test animal as frequently happens where the cutaneous inoculation method is used to confirm resolving cases. Table VII lists the New Orleans series both negative and positive (guinea pig test), with principal lesions observed.

TABLE VII

Rats suspected of resolving plague. Results of guinea pig inoculations and tabulation of principal lesions, New Orleans, November 1, 1919, to February 29, 1920

Description of lesions	No. of rats in each group	No. of confirmed cases	Percent confirmed
Total number of suspicious cases	1,019	89	8.7
Spleen lesions	770	72	11.2
Caseous areas and zones	123	17	13.8
Granules	41	6	14.6
Broad or heavy scars, bisecting bands of fibrous tissue, etc.	109	10	9.2
Fresh transverse linear rupture	10	4	40
*Transverse linear scars	400	29	7.3
Adhesions	161	17	10.5
Abscesses	13	2	15.4
Liver lesions	218	13	5.9
Discrete granules	173	12	6.9
Caseous areas	31	1	3.2
Scars, adhesions or abscesses	22	0	0.0
Pleural effusion	101	9	8.9
Peripheral abscesses at sites of lymph nodes	23	3	13
Multiple lesions (included above)	152	17	11.2

*Linear scars are also due to other conditions more often than most lesions listed. However, 7.3% positive is a high figure for a lesion that frequently must be months old.

PROPORTION OF RATS FOUND INFECTED

In this country where eradication immediately begins upon the discovery of plague in a community, most of the rats brought into the laboratory have been trapped. Among these the proportion of infected ones has seldom risen over 2 or 3 per cent and is usually lower. As eradication proceeds the proportion of infected rats declines, rapidly at first, then more gradually and may go as low as .01% or less before becoming zero. The highest proportion recorded in this country was recently seen in Beaumont, Texas, where 75 or 15% of the first 500 rats were found infected. Most of these however were picked up dead in various parts of the city. When trapping operations were well under way the percentage of infected rats fell to a low figure.

EXAMINATION OF SMEARS

As indicated above the writer is inclined to regard positive or suspicious smears as the sixth cardinal sign of plague, and to give it equal weight, but no more, with the other signs in arriving at a conclusion. In making this statement, however, it is necessary to

caution the reader that bacilli more or less resembling plague are frequently seen in smears from negative rats so that the avoidance of confusion requires long experience. Indeed occasionally one sees, though nearly always in small numbers, organisms in smears from rats which are not *B. pestis* but morphologically indistinguishable from it. Despite this when in a smear from rat tissues appear considerable numbers of organisms of typical morphology the picture presented is at least as characteristic as is any of the gross lesions. *B. pestis* grown on artificial media (except salt agar) show variable appearance and their morphology is not to be relied upon. One not thoroughly familiar with plague should be very guarded in diagnosis of smears and should not declare one positive unless it shows all of the following characteristics: lightly-staining, rounded-end bacilli in considerable numbers scattered about the field without any particular arrangement; a portion of these showing distinctly heavier staining at the poles shading to almost or quite clear in the central part; variations in size of individuals from short coccobacillary or ring-like coccoid forms through all intervening sizes to individuals 2 or 2½ times as long as broad.

Smears from acutely-infected rats usually show *B. pestis*, while in those from resolving cases it is rarely found. It is rare indeed for smears from a typical bubo to be negative, though occasionally it is necessary to make several smears from different parts before finding the bacilli. Table VIII lists acute cases in New Orleans with results of smear examination.

TABLE VIII

Acute cases of plague in rats with numbers showing positive, suspicious and negative smears, New Orleans, 1919-1920

Number of Acute Cases	Number Positive Smears	Number Suspicious Smears	Number Negative Smears
441	315	87	39

PLAGUE IN MICE

Mice are known to be more resistant to plague than are rats so that it is only natural to find that infected mice are

much more seldom encountered. As a matter of fact they are very seldom found except in heavily infected buildings, and then as a rule only after the epizootic has practically passed through the rat population. Since November, 1919, a total of 30 plague-infected mice have been discovered in New Orleans among well over 100,000 examined.

While the signs of plague in mice are essentially the same as in rats their detection is a much more difficult matter on account of the small size of the animals on the poor condition in which they are usually received. The trap usually employed in rat catching in this country is the so-called "snap" trap in which a stiff wire actuated by a heavy spring snaps over and crushes the rat to the base of the trap. One can readily appreciate what happens to a mouse struck a blow sufficient to kill a full grown rat. About the best you can do with that mouse in the laboratory is to guess at whether it has plague. Sometimes infected mice are recovered after fumigation, however, and in these, injection, bubo, granular liver, large dark spleen, and very occasionally pleural effusion can be demonstrated. We have seen two proven infected mice believed to be resolving cases. Several of this series represent a number from one address inoculated in combination. In such instances they are recorded as one mouse. Table IX lists the lesions as seen in this group:

TABLE IX

Plague-infected mice. Occurrence of various lesions, New Orleans, 1919-1920

Description of Lesions	No. of Mice
Total infected mice.....	30
No. discernible lesions.....	9
Composite inoculation.....	4
Inoculated because caught at infected location.....	5
Injection.....	14
Slight.....	1
Moderate.....	6
Marked.....	6
Intense.....	1
Buboes, 2 ing., 1 ing. and ax.....	3
Large injected liver.....	11
Granular liver.....	6
Pleural effusion.....	1
Large dark spleen.....	10
Resolving plague.....	2
Spleen scar.....	1
Caseous area in spleen.....	1

PLAGUE IN GUINEA PIGS

Since these animals are relied upon for confirmation of plague infection in so large a proportion of cases, it is essential that the signs of plague in guinea pigs be well understood. As in rats, plague is here an acute disease, inoculated animals rarely living longer than ten days, and usually dying in five or six days. In general the evidences of infection are similar to those in rats with some important variations. A clearer impression can therefore probably be conveyed by contrasting the various lesions with analogous ones in rats.

Site of inoculation: This does not appear in naturally-infected rats but is a constant sign in all artificially inoculated animals. It varies from a small patch of hemorrhagic infiltration to a wide area of thickened hemorrhagic edematous tissue surrounded by gelatinous edema. Ulcers may form beneath a cutaneous inoculation, but necrosis or pus at the site of a subcutaneous inoculation is generally the result of the presence of other organisms in the injected material. Very widespread, intensely hemorrhagic reactions are usually due to a small bacillus belonging to the hemorrhagic septicemia group.

Injection: As a rule less marked in the guinea pig and confined more to the larger vessels. Slight injections are common and intense ones rare. Rather widespread subcutaneous gelatinous edema is common.

Bubo: Very large in size compared to that in the rat. After cutaneous or subcutaneous inoculations it is a very constant sign usually appearing in the groin, where it commonly involves a whole string of glands which become the caseous central portion in a common thick mass of highly-congested connective tissue frequently markedly hemorrhagic. Section of this mass reveals the caseous material that is all that is left of the glands. Early buboes may show the separate, large, partly-caseous

glands surrounded by injected gelatinous edema.

Liver: As in the rat nearly always distinctly enlarged and injected. Granules are of frequent occurrence but larger than in the rat and few in number.

Spleen: The most characteristic sign in guinea pigs occurs in the spleen. This organ normally about 2 cm. by 1.5 cm. and a few millimeters thick becomes enormously enlarged frequently more than doubling all of its dimensions. It is dark, friable, and profusely studded with white granules characteristically varying in size from a pinhead to two or three millimeters in diameter. Not infrequently where the spleen has rested against the abdominal wall there appear in the latter small areas of congestion and hemorrhage.

Lungs: Pleural effusion is quite rare in plague-infected guinea pigs. Substituted for it we frequently find in the lungs small round dull red spots with white or gray caseous centers. In some cases these caseous foci are quite large.

Smears: In typical cases of plague in guinea pigs plague bacilli can practically always be demonstrated in smears. If the animal has died within one or two days from rough handling, pneumonia or other cause other than plague, signs may be poorly developed and smears negative.

As in rats, the signs in guinea pigs may differ considerably in degree, so that close observation and not unusually the inoculation of additional animals may become necessary to make a diagnosis, particularly if death has occurred within the first three days after inoculation.

Guinea pigs that have been inoculated intraperitoneally with a relatively pure culture of plague, such as aspirated material from a human bubo, generally die in two days, presenting a different but no less characteristic picture. Buboes are absent. Gelatinous edema and small hemorrhages often appear where the

needle has been withdrawn through the muscles and subcutaneous tissues. The viscera are intensely injected, the liver and spleen enlarged and may show small beginning granules. Most characteristically there appears within the abdomen a thick, ropy, milky, mucoid fluid containing enormous numbers of *B. pestis*. When the injected material is contaminated a confusing picture usually appears.

Plague-like diseases: As stated above, two organisms produce plague-like diseases in guinea pigs. The signs presented so closely resemble plague as frequently to be indistinguishable from it. Neither of these organisms occurs naturally in rats so that one would hardly ever meet them in guinea pigs inoculated from rats. They should be borne in mind, however, as possible causes of deaths among stock animals. One of these, which occurs naturally in ground squirrels (*B. tularensis*) does not resemble *B. pestis* morphologically and has been artificially cultivated directly from tissues only on a special egg media. *B. pseudotuberculosis rodentium* is morphologically and culturally identical with *B. pestis*. It differs from it only in that it is avirulent to rats and requires as a rule a longer time to kill guinea pigs. Several workers have shown that rats may be immunized against *B. pestis* by subcutaneous inoculation with *B. pseudotuberculosis*, and S. Rowland has succeeded in growing from virulent *B. pestis* a culture in every way identical with this first-named organism.

BACTERIOLOGY OF PLAGUE

The sum of the experience of many workers on plague leads to the conclusion that the *B. pestis* is an easily identified organism, in the bacteriologic differentiation of which only four media are necessary. Discussion will therefore be confined to these. They are, plain agar with slightly alkaline reaction, broth, litmus milk and agar plus 2.5% to 3% sodium chloride.

Differentiation starts with isolation of a pure culture. This is usually readily done on agar plates. In cold weather, portions of liver, spleen and heart's blood from the suspected rat may be streaked over a plate with good chances of securing a growth from which a pure culture can be easily picked. In hot weather tissues of the rats, usually when received, are contaminated with too many rapidly multiplying putrefactive organisms for plague to be isolated. In such cases a pure culture is obtained from the inoculated guinea pig by killing it on the fourth or fifth day, or sooner if well-marked bubo appears, and making cultures at once from the liver, spleen and bubo.

Bacillus pestis grows slowly on the media mentioned, appearing on agar as small translucent whitish colonies which are usually, though not always, sticky when touched with a platinum needle. In broth frequently a thin pellicle appears on the surface, which is easily broken up and settles in small flocks and granules some of which adhere to the side of the tube. The "stalactite" formation spoken of in some reports requires entire freedom from vibration for its production and is rarely seen.

On agar it grows as a short rod, in broth frequently in short chains, while on salt agar literally astounding involution forms occur; tremendous rods, enormous cocci, balloon shapes, club and dumbbell forms. The appearance of these involution forms on salt agar is almost pathognomonic, no other organism (except *B. pseudotuberculosis rodentium*) that is at all likely to be confused with plague giving rise to any such growth.

In litmus milk it produces no change or slight acidity, shown as a rule more by a lighter blue color than by any distinct red.

Having secured an organism with the above cultural characteristics it becomes necessary, for complete confirma-

tion, to carry out Koch's postulates by infecting one or more rats (white or wild) with the culture, observing the signs of plague and isolating the original organisms from its tissues. Control, serum-protected rats are hardly necessary since no other known disease with gross lesions of plague is produced in rats by any organism with the cultural characteristics given above.

One often hears of organisms closely resembling the plague bacillus. It is a bugbear, however, that in practice is rarely encountered. The two organisms, *B. pseudotuberculosis rodentium* and *Bacterium tularense*, which cause plague-like diseases in guinea pigs are both either nonpathogenic to rats, or if they do in a few instances infect, they fail to produce plague-like signs. In the case of the former there is good reason to believe that it may be a strain of plague that has lost its virulence for rats and become of diminished virulence for guinea pigs.

It is not always easy to isolate *B. pestis* from a given case. Some strains when taken from animal tissue grow very poorly at first on agar or fail entirely to grow. In such instances the use of serum agar or blood agar will overcome the difficulty. Once growing on this they will generally readily transfer to plain agar. In some cases it is difficult to develop involution forms on salt agar. Repeated subculture will usually bring them forth or variation in the amount of salt may have this result.

PLAGUE IN GROUND SQUIRRELS

To be complete for the United States a description of plague as it appears in ground squirrels should be included, but this would greatly prolong this paper. Those interested are referred to the excellent description by McCoy.

PLAGUE IN OTHER RODENTS

While practically all rodents are susceptible to plague, few naturally infected

ones, besides those already mentioned, have been discovered in this country. In San Francisco McCoy found one naturally infected field rat (*Neotoma*) and in New Orleans there was trapped recently a field rat (*Hesperomys pulustris*) which proved infected.

COLLATERAL LABORATORY OBSERVATIONS

It is usually desired to determine the species and sex of rats brought to the laboratory. Briefly the *rattus* can be easily separated from the *Norvegicus* by the relatively slenderer lines, longer legs, more membranous ears, dark black hair, and the tail longer than the head and body together. *Alexandrianus* differs from *rattus* only in having black, gray or brownish hair with a white belly. Crosses between *rattus* and *Alexandrinus* are occasionally seen. Determination of sex should be done after dissection by locating the testicles or uterus for in the young males frequently the testicles are undescended making it difficult to distinguish them externally from the females.

CONCLUSION

In concluding the writer regrets to inform his readers that despite all this necessarily long description that some have just waded through and that others will miss by reading the conclusion first, they will not have an altogether accurate picture of a plague rat in their minds until they have seen one. To this end it is suggested that those who may have to conduct the examination of rats secure preserved specimens, which while not quite the same as fresh tissue, give a better conception of the various lesions than any written description can possibly present. Such specimens can be secured in limited numbers from the Hygienic Laboratory of the U. S. Public Health Service, Washington, D. C.

REFERENCE

Plague has been rather completely dealt with by the Indian Plague Com-

mission, whose reports appeared in the Journal of Hygiene, Cambridge, England, and by various officers of the United States Public Health Service, principally Creel, McCoy and Simpson, most of whose reports are in the Public Health Bulletins and Public Health Reports. Persons interested are referred

to these publications where also will be found extensive bibliographies. McCoy's description of plague in ground squirrels and of a plague like disease will be found in the following:

Public Health Bulletin No. 43. I. Studies Upon Plague in Ground Squirrels. II. A Plague Like Disease of Rodents. By George W. McCoy, U. S. P. H. Service, Washington, D. C.



NOVA SCOTIA NOTABLES

This group of citizens, assembled in the rain before the City Hall in Halifax, is there on account of interest in the Nova Scotia Red Cross Public Health Caravan, and in public health generally, and preventive methods. The figure in the center with the tall hat is His Honor, the Lieutenant-Governor, with Mrs. Grant on his right and on his left a Government House guest, Miss TenBroeck of London, England. The tall man over the Governor's right shoulder is the Provincial Health Officer, Dr. W. H. Hattie. The clergyman in the rear is Dean Llwyd of the Anglican Church. In white shoes in the front row is Miss Helen Creighton of Dartmouth, driving one of the ambulances. To the left of the boy scouts is Dr. D. A. Craig, tuberculosis examiner for the Massachusetts-Halifax Health Commission, while behind the man who is showing in full his Red Cross arm band is His Worship, John S. Parker, Mayor of Halifax. Starting at the flagpole are Mr. H. E. Mahon, Treasurer of the Red Cross; Col. Woodbury, in charge of the organization; Dr. Edgar Douglas, in charge of Caravan No. 1, and Dr. J. A. Doull, in charge of No. 2.



BOTULISM

ERNEST C. DICKSON, B.A., M.D.

*Associate Professor of Medicine, Stanford University Medical School,
San Francisco, Cal.*

Read before joint session of Laboratory, Public Health Administration and Food and Drugs Sections,
American Public Health Association, at San Francisco, Cal., September 14, 1920.

Much that has been written about botulism is not true and truths have been so distorted as to convey false impressions. This paper presents truths plainly and without bias. Two things are important—canned foods that show any signs of spoilage must be destroyed, so that neither animals nor man can eat them, and boiling “ready to serve” canned foods will always make them safe.

THE term Botulism has become particularly well known in the United States during the past few months because of the sensational manner in which a portion of the daily press gave prominence to a few outbreaks of food poisoning of this type. As a result of this publicity the impression has been widely disseminated that we are face to face with a new and terrible disease and that California food products, particularly ripe olives, are especially liable to be contaminated with its poison. Much that has been written in the press about botulism is not true, and many of the facts have been so distorted that a false impression has been established. It is the object of this paper to attempt to present the problem in its true light and to urge that it be approached in an unbiased manner. It is only by facing the facts that we can hope to establish methods by which all danger of food poisoning of this type can be removed.

Botulism is not a new disease. The first recorded outbreak was described in 1735 and by 1802 the number had become so great in Würtemberg that an official bulletin was issued in which the people were warned against the use of spoiled sausages and were instructed as to the best methods for preparing and curing sausages. Since that time there

have been many outbreaks of botulism in Europe, particularly in southern Germany, and in Würtemberg the incidence was so great that about 1820 a law was passed which required that all outbreaks should be reported to the authorities.

The word botulismus or botulism was derived from the Latin, botulus, meaning sausage, and in the earlier medical literature was used synonymously with Wurstvergiftung, or sausage poisoning. As time elapsed, however, it became evident that the peculiar symptom-complex which had been observed in these cases of sausage poisoning was also produced in poisoning from preserved meat and fish and the term was gradually extended to include certain types of meat poisoning and fish poisoning as well as sausage poisoning. Within recent years an outbreak of food poisoning which was undoubtedly of the same type occurred at Darmstadt in Germany, in which the cause of the poisoning was canned white beans which were served as salad, but, although a strain of *Bacillus botulinus* was isolated from the beans, the full significance of this outbreak was to a large extent overlooked.

The cause of botulism was discovered by Van Ermengem in 1894, when he investigated an outbreak of food poison-

ing at Ellezelles in Belgium, in which 23 persons were ill and 3 died after eating ham which had been preserved in brine. Van Ermengem found that the poisoning was caused by a toxin which is produced by the growth of a spore-bearing, anaërobic bacillus which he called *Bacillus botulinus*. The organism grows actively at ordinary room temperature and elaborates its toxin which is extremely poisonous for various animals and fowl as well as for man, and which is not destroyed by the action of the digestive ferments.

Van Ermengem's observations were repeatedly confirmed in Europe, but in spite of the results of the investigations of the Darmstadt outbreak the impression became general that the organism could not produce its toxin except in the presence of protein of animal origin. A few years ago I was able to prove that protein of animal origin is not essential for the development of the toxin, and investigations of numerous outbreaks of food poisoning in this country have shown that many have been caused by the ingestion of canned vegetables or fruits in which the organism had grown and produced its toxin.

In connection with our investigation of outbreaks of botulinus intoxication it became evident that the toxin is a frequent cause of so-called limber-neck in chickens and other domestic fowl. Buckley and Shippen have shown that it may produce symptoms of forage poisoning in horses and mules, while Graham and his associates have repeatedly demonstrated that *B. botulinus* could be recovered from silage and other fodder which was responsible for the poisoning of various domestic animals.

The term botulismus, therefore, has now a much wider significance than when it was coined to include only cases of sausage poisoning. It now is used to indicate poisoning with the toxin of *B. botulinus* and includes all cases of poisoning of human beings, animals or fowl, in which the symptoms were caused

by the botulinus toxin whether in meats, fish, fruits, vegetables, or fodder.

The number of recorded outbreaks of botulism affecting human beings in the United States has not been large, but it is probable that many cases have escaped notice because of the mildness of the symptoms, or because they have been grouped under the general diagnosis of ptomaine poisoning. We have record of 54 outbreaks affecting human beings, of which all but 3 have occurred within the past 11 years, and in which 228 persons were poisoned.* In 9 the food which caused the poisoning was not known, but of the remaining 45, 38 were caused by the ingestion of preserved food, of fruit, or vegetable origin.

In addition to the outbreaks in which human beings were poisoned there is record of 22 more in which domestic animals or fowl were poisoned by eating food which had been prepared for human consumption, but which had been recognized as spoiled and had been discarded. In all, therefore, there have been at least 76 outbreaks of poisoning of this type from foods prepared for human consumption, and of these 76, 62 were caused by foods of fruit or vegetable origin.

This fact is of considerable interest when viewed in comparison with the recorded causes of the poisoning in Europe. According to Bitter's recent report there has only been one outbreak in Germany in which the cause was shown to be food of other than animal origin, although he states that in approximately 25 percent of the cases the cause of the poisoning was not determined. In the United States, on the other hand, over 80 percent of all the outbreaks which were caused by foods prepared for human consumption, were due to the presence of the toxin in foods of fruit or vegetable origin. This does not include all those outbreaks of forage poisoning

*The figures quoted in this paper include all recorded outbreaks to June 30, 1920.

in animals in which the toxin was contained in fodder which was also of vegetable origin.

The mortality of the recorded outbreaks of botulism in the United States has been very high, 67.98 percent, but it is probable that this is considerably in excess of the true mortality since only the more severe outbreaks have been recorded in most parts of the country. A comparison with the mortality in Germany is extremely interesting, since in that country botulism has been a reportable disease. According to Mayer's report in 1913 from data obtained from official records the mortality was 44.9 percent, but in 1919 Bitter's report of the outbreaks in Prussia since 1897 showed an average mortality of only 16.2 percent. Bitter pointed out that of the cases taken from official records between 1897 and 1913, in which all cases were recorded, the mortality was only 8.6 percent, but that of the cases recorded in the medical literature since 1913, it had been 32.6 percent, indicating that only the more severe cases had been recorded in the literature. This author also stated that the mortality varied greatly in different outbreaks depending upon the type of food which was responsible for the poisoning and tending to be lower in proportion to the probability of the food being sufficiently cooked before it is eaten. It is interesting in this respect that the outbreaks in the United States have been almost exclusively caused by preserved foods which were served as salad or dessert without being cooked after they were removed from the container, and it is possible that the high mortality in this country may be so explained.

It has frequently been stated that botulism is a problem which especially affects the Pacific Coast States, but in my opinion this is not the case. It is true that there have been more recorded outbreaks in California than in any other state in the Union, but that is probably largely due to the fact that careful search

has been made for them in California. Independent investigations of various observers have resulted in the isolation of *B. botulinus* from foods which were grown within the states and preserved for human consumption or for the use of domestic animals in New York, New Jersey, Indiana, Illinois, Kentucky, South Dakota, Idaho, Washington, Oregon and California, and that food which epidemiological investigations indicated as the probable cause of outbreaks of botulism were grown and preserved in Ohio and Kansas. With such a wide distribution of the *B. botulinus* one can scarcely believe that the problem is of importance only in the Pacific Coast States.

The active investigation of botulism in California covers a period of nearly seven years during which time some data have been accumulated which may be of assistance in indicating the line of investigation which should be undertaken in other States where *B. botulinus* is known to occur. The work was done in the laboratories of the Stanford University Medical School until the past few months, and during the war was aided by the California State Council of Defense, but recently it has been possible to enlarge the scope of the investigation because of a grant of money which was made by the National Cannery Association and the California Olive Association for a study of botulism in California. At the present time the University of California, the United States Public Health Service and Stanford University are coöperating in the work, the laboratory investigations being divided between the laboratories of the George William Hooper Foundation for Medical Research and of the Stanford University Medical School, while the epidemiological investigation is being made by an officer of the U. S. P. H. S., who has been detailed to California for that purpose.

In our investigations we have studied the outbreaks of poisoning of human beings as they occurred, have noted the coincidence of poisoning of domestic ani-

mals or fowl which have eaten portions of the discarded food, have compared the distribution of outbreaks of poisoning of human beings with outbreaks of forage poisoning in domestic animals and are making an exhaustive study of the distribution of *B. botulinus* in nature. The greater part of the results of the recent investigations are not yet ready for publication, but certain data are available which are of interest.

In California, as in the country as a whole, by far the greatest number of outbreaks of botulism have been caused by the ingestion of canned vegetables and fruits, the majority of which were home-canned products. Prior to June 30th of this year we had record of 54 such outbreaks within the state, all of them caused by foods prepared for human consumption, and many of them including domestic animals or fowl as well as human beings among the victims. In a number of instances the animals and fowl were poisoned by remnants of food which were discarded from the table after the meal which had caused the poisoning of the human beings, and in these instances the chickens were usually ill in from 12 to 24 hours before the human beings showed signs of poisoning, a fact which may be of some importance in serum therapy.

It has been found that outbreaks occur in all parts of the state, but that they seem to be more frequent in certain sections. An extremely interesting observation is the evident relationship which exists between the distribution of forage poisoning of animals in California and of outbreaks of botulism affecting human beings. It must not be understood that all the recorded cases of forage poisoning in California are presumed to have been due to the botulinus toxin, but judging from the results of the experiments of Buckley and Shippen and the observations of Graham and his associates in Kentucky and Illinois, as well as from a limited number of observations in California, there is every reason

to believe that at least a portion of the outbreaks of forage poisoning in this state are botulinus intoxications. The reasons for the concentration in certain areas have not yet been determined.

The isolation of *B. botulinus* from foods which have been the cause of poisoning or from the crops or gizzards of chickens which have died after eating the poisonous food has become so frequent as to be almost a matter of routine. There is little difficulty in establishing the presence of the toxin, although it is exceedingly difficult to get the organism out in pure culture. The method which we have adopted is to make a suspension of the suspected material in broth or normal salt solution, heat it in a water bath at 60° C. for an hour, and inoculate into flasks of glucose infusion broth prepared according to the formula of Van Ermengem, but adjusted to a PH of from 8 to 8.4. In these flasks the medium is covered with liquid paraffin and incubated for about one month. Tests are then made for the presence of toxin by inoculating guinea pigs or white mice, and if the animals succumb to the injections of the material, which has been passed through a diatomaceous filter, tests are made with antitoxin for definite diagnosis. When botulinus toxin has been demonstrated the organism is isolated in pure culture by fishing the characteristic colonies from shake cultures made in deep glucose agar or liver agar. The method has proved successful in many instances and is recommended because of its simplicity.

An interesting fact which is now generally recognized is that there are at least two distinct strains of *B. botulinus* in this country which we have called Types A and B. A specific antitoxin can be prepared for each of these types, but each is specific for its homologous toxin only, and neither has any appreciable effect in protecting against the toxin of the other type. This is of prime importance in connection with the serum therapy of botulism, as it is essential that

either the type of the toxin which caused the poisoning be known in every instance or that a polyvalent serum or quantities of both types of serum be administered to the patients. It is a curious fact that the greater number of strains of *B. botulinus* which have been isolated in the eastern states have been Type B, whereas the majority of those found in the West, and also those recovered in the East from foods which had been preserved in California, have been Type A. It is also of interest that two toxin producing strains which were obtained from Germany, and botulinus antitoxin prepared from the Van Ermengem strain which was obtained through the courtesy of the director of the Koch Hygienic Institute at Berlin, are all apparently homologous with our Type B.

The use of botulinus antitoxin as a therapeutic measure is deserving of mention. In so far as the published records can be interpreted they seem to coincide with our experience with botulinus antitoxin in that no appreciable benefit has been derived from its use. However, it is my opinion that the antitoxin has not been given a fair trial. We have shown in laboratory experiments that if the homologous antitoxin is given in sufficient quantities at the same time as, or shortly after the toxin is administered to guinea pigs, it protects in 100 percent of cases, whereas, if the antitoxin is not given until from 24 to 30 hours after the administration of an amount of toxin which will kill the animal in 48 hours none of the animals survive. In all the instances of which I have knowledge the administration of antitoxin to human beings has been delayed until several days after the ingestion of the poison, and in several instances a Type B serum was administered in cases in which the toxin was later proved to be Type A. Under these circumstances one is not justified in concluding that the serum has no therapeutic value. It must be used early and in sufficient quantities, and either a polyvalent serum or a mixture of both types of

serum must be administered if one is to hope to obtain any satisfactory results.

If the serum can be administered early enough, there is no reason why it should not prove as satisfactory as in laboratory experiments. It is possible that in some instances the early development of limber-neck in chickens which have eaten discarded human food may afford indication for the administration of the antitoxin to the human victims in time to be of value.

In our treatment of cases we are insisting that the usual tests for hypersensitiveness to horse serum be made and that, if hypersensitive, the patient be desensitized by giving subcutaneous, intramuscular and intravenous injections of 1 cc. of serum at intervals of one hour. The administration of the serum is by intravenous injection, one hour after the last desensitizing injection, and large quantities of serum of both types are given slowly, not more than 1 cc. of serum being injected per minute.

The relationship of *B. botulinus* to the preservation of foods, whether at home or commercially, is of the utmost importance. The facts that the organism is a spore bearer, and that the spores are unusually resistant to heat, that is a toxin producer, that its toxin is not destroyed by the digestive juices, and that it grows readily and produces its toxin in fruits, vegetables and meats at room temperatures, are all reasons why it is essential that in preserving foods the utmost care should be taken to prevent as much as possible its access to the food and to employ sufficiently thorough processes to ensure the destruction of any spores which may be present. This is not a simple procedure. It has been shown repeatedly that various vegetables and fruits which were grown in the owner's garden under hygienic conditions which were at least as favorable as in the majority of kitchen gardens, and where the vegetables and fruits have been canned at home with the most careful precautions, have later been responsible for the

poisoning of persons or of domestic fowl, because of the presence of the botulinus toxin. Moreover, it has been shown that fruits and vegetables purchased in the open market and canned at home have also been responsible for subsequent outbreaks of botulism. It is therefore clear that under existing conditions we cannot depend upon the exclusion of *B. botulinus* from the raw foods which are to be preserved, but that we must depend upon the sterilizing process to kill what spores may happen to be present.

The temperature of boiling water is not sufficiently high to ensure the destruction of the spores. It has been found that all the strains of *B. botulinus* are not equally resistant to heat, but that some of them are extremely resistant. Mrs. Burke, in our laboratories, has shown that one strain which she tested withstood 15 pounds pressure in the autoclave, that is a temperature of 250° F., for ten minutes, and that two withstood immersion in live steam in an Arnold sterilizer for four hours, while Miss Edmondson, at the Bureau of Chemistry in the U. S. Department of Agriculture, recorded another strain which resisted ten pounds pressure in the autoclave, 240° F., for 15 minutes. It is obvious that many of the methods employed in preserving food, particularly the home-canning methods, are inefficient if spores of the more resistant strains of *B. botulinus* happen to be contained within the can.

In so far as the commercial canning industry is concerned, the chief difficulty to the present time has been from ripe olives. The number of persons poisoned by the ripe olives was unfortunately rather large, but it must, in fairness, be emphasized that only four lots of olives of all the olives packed have been shown to be contaminated with toxin of *B. botulinus*. The number of outbreaks was not large, and the mortality was no higher than has occurred in many outbreaks from home-canned products, but

the latter have not been so widely featured in the daily press. The olive canning industry of California has taken steps to ensure as much as possible that there will be no recurrence of this type of poisoning, and are heartily coöperating with the State Board of Health in the attempt to standardize their processes. Under a recent ruling of the State Board of Health it is required that all ripe olives canned in brine must be processed at 240° F. (ten pounds pressure in the retort) for at least 40 minutes, and that the brine in the shipping and holding tanks must be of such concentration as will prevent excessive fermentation.

There has been some difference of opinion as to whether food which contains the botulinus toxin is always so spoiled as to readily attract the attention of the one who opens the container. It is probable that there is always more or less marked evidence of spoilage in food contaminated with *B. botulinus* toxin, but it is wrong to believe that it is always very evident. In the laboratory I have seen a few cans of vegetables which had been experimentally inoculated in which there was no macroscopic evidence of spoilage and in which but little odor could be detected, although they contained a virulent toxin, but in the majority of instances the signs of spoilage were very marked and the odor was offensive. However, there are numbers of instances on record in which the housewife who opened the jars of vegetables could not determine that the food was spoiled, even after she had smelled and tasted it, although her subsequent illness and death were evidence that the toxin had been present in considerable amounts. In some cases the offensive odor was not noted until the food became heated during the process of cooking, and there are several instances in which persons who ate the food as salad with salad dressing did not notice anything unusual in its taste or odor. It cannot therefore be stated that only food which is obviously unfit for consumption is liable to contain the

botulinus toxin, but it should be emphasized that any preserved food which shows the slightest sign of spoilage should be discarded without being tasted, and should not be left where human beings or domestic animals or fowl may have access to it. The toxin of *B. botulinus* is destroyed by heat, and if canned food is thoroughly heated through after it is removed from the container all danger of botulinus poisoning will be removed. It may be added that there are few, if any, "ready to serve" canned foods which are in any way damaged by being boiled and, if necessary, cooled before they are eaten.

In our investigation from the beginning we have had the cordial coöperation of the State Boards of Health in California

and in the adjoining states which we have visited from time to time when outbreaks of botulism were reported. Three of the Western states, California, Oregon and Arizona, and New York State have made botulism a reportable disease, and we hope that other states will soon follow the example. We greatly appreciate the coöperation of the U. S. P. H. S. in detailing a trained epidemiologist to assist in the work in California, and we believe that only by coöperation on the part of the State and Federal authorities in all parts of the country will it be possible to gain a true perspective of the economic importance of botulism in the United States and to standardize methods for its prevention and control.



COMPARISON OF THE BACTERIAL COUNTS FROM MACHINE AND HAND WASHED DISHES AND THEIR SIGNIFICANCE

ROY S. DEARSTYNE
*City Health Department,
Charlotte, N. C.*

More and more it becomes evident that carelessly washed dishes and utensils in eating places and at soda fountains are potential disseminators of infections. Principles like this, however, need to be confirmed by observation. This paper furnishes practical facts that point to the health value of machine dish washing.

ONE of the most potent sources of danger from the standpoint of sanitation in restaurant inspection is the matter of cleaning and handling dishes and utensils in public eating places. Many cities have stringent regulations regarding the handling of restaurant utensils, but the fact remains that despite the most elaborate system of inspection, such places are for the greater part of the time "running under

their own head," and are placing before the public utensils of questionable cleanliness and sterility. That such a condition is a factor in the spread of infectious diseases can hardly be questioned.

The following work was done during the early spring and summer of 1919 while the writer was connected with the Health Department of the City of Alexandria, Va., and was the outcome

of a question of the relative safety of various methods of dish cleaning used in eating places in that city. Unfortunately, only one eating house was available which had a thoroughly modern mechanical dishwasher, and whose proprietor utilized proper precautions in using it. The rest of the places represented every phase of the old system of washing in hot water, and drying with a towel, from the worst to the best, and included various degrees of temperature, soapiness, and cleanliness which the respective proprietors considered adequate and necessary.

In this work, the technique employed was as follows: For coffee mugs and water glasses, 100 cc. sterile water dilution blanks were carried to the eating houses and poured, with aseptic precautions into the cups and glasses as ready for public use. A sterile, moistened cotton swab was then taken, and that section of the cup or glass which could reach the lips of any person using it, was thoroughly swabbed. It was then emulsified in the dilution. This was then poured back into the blank which was taken to the laboratory where agar plates were poured, and counts read at the end of 48 hours incubation at 37½° C. For knives, forks, and spoons, sterile moistened swabs were rubbed over that portion of the utensil which might come in contact with the user's mouth or food to be eaten, and the same procedure in enumerating organisms followed from this point as in the cases of coffee mugs and water glasses.

In the following tabulations, restaurants 1 and 2 were Greek lunches, kept in a fairly clean condition. Number 3 was a negro lunch room, in which the dishes were washed in a dish pan, probably representing as bad a condition as could be found. Number 4 was a new, up-to-date lunch room, lacking only the electric dish washer. Number 5 was an ordinary lunch with the usual conditions prevailing. Number 6 was, as noted,

equipped with a thoroughly modern electric dish washer, and the proprietor took pride in the condition of his glassware and utensils. All of the places, with the exception of Number 3, had an adequate supply of boiling water, but it is questionable whether it was used at all times.

Table 1 represents an average of 9 of the lowest of 10 counts taken on each utensil at each place.

TABLE 1
Restaurant Numbers
Hand washed

Utensil—	1	2	3
Coffee Mugs.....	26,000	100,000	200,000
Water Glasses.....	23,000	130,000	120,000
Spoons.....	3,400	8,200	70,000
Knives.....	1,500	20,000	No test
Forks.....	1,500	11,000	3,200
Coffee Mugs.....	160,000	130,000	3,700
Water Glasses.....	33,000	No test	1,700
Spoons.....	13,000	17,000	2,000
Knives.....	6,400	2,700	1,500
Forks.....	2,600	7,600	1,600
*Machine washed.			

Table 2 shows the highest and lowest individual bacterial counts obtained on each utensil at each place.

TABLE 2
Restaurant Numbers

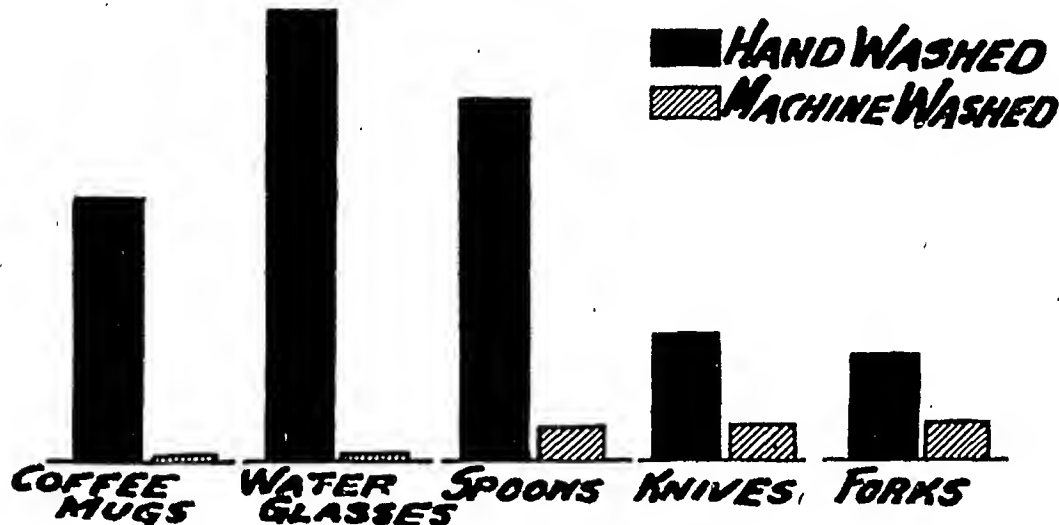
Utensils—	Highest	Lowest
Coffee Mugs.....	63,000	1,000
Water Glasses.....	50,000	2,000
Spoons.....	7,700	1,000
Knives.....	4,000	600
Forks.....	6,200	500
Utensils—	Highest	Lowest
Coffee Mugs.....	760,000	12,000
Water Glasses.....	630,000	24,000
Spoons.....	32,000	1,700
Knives.....	63,000	3,200
Forks.....	31,000	4,000
Utensils—	Highest	Lowest
Coffee Mugs.....	890,000	46,000
Water Glasses.....	880,000	10,000
Spoons.....	300,000	5,000
Knives.....	No test	No test
Forks.....	50,000	4,800
Utensils—	Highest	Lowest
Coffee Mugs.....	890,000	23,000
Water Glasses.....	1,200,000	2,500
Spoons.....	600,000	1,600
Knives.....	26,000	1,400
Forks.....	230,000	700
Utensils—	Highest	Lowest
Coffee Mugs.....	570,000	8,000
Water Glasses.....	No test	No test
Spoons.....	620,000	1,000
Knives.....	4,300	1,100
Forks.....	82,000	1,200
Utensils—	Highest	Lowest
Coffee Mugs.....	13,000	1,600
Water Glasses.....	2,700	1,200
Spoons.....	17,000	400
Knives.....	8,500	500
Forks.....	3,200	900

Chart 1 is a graphic representation of the average relative difference in bacterial count between machine and hand washed dishes, from a numerical standpoint.

Little work has actually been done on the question as to whether or not there is danger of disease transmission through

PUBLIC HEALTH, entitled *Influenza and Pneumonia as Influenced by Dish Washing in 370 Public Institutions*, presents probably the most tangible connection of disease transmission through restaurant utensils recorded, and undoubtedly will be the basis of more investigational work on this subject.

CHART I



restaurant utensils. Many opinions have been expressed, however, and the consensus of these opinions seems to indicate that there is a real danger, especially in the transmission of certain respiratory throat and skin diseases. Actual proof of this, however, is hard to obtain. The comprehensive and valuable work by Col. Cumming in the July issue of the AMERICAN JOURNAL OF

CONCLUSIONS

1. It is certain that in most restaurants and other public eating places, too little attention is paid to washing, drying and handling dishes and utensils.
2. The value of the machine dish washer over the old system of hand washing as determined by the numerical bacteria growth on utensils can be seen from the above tabulations.

Protection of Sand-Blasters Against the Dust Hazard.—Helmets provided with positive air pressure and the simpler forms of respirators afford substantially complete protection. The introduction of 2½ to 3 cu. ft. of air per minute through a ¼ in. hole at the top of the helmet, beneath which a deflector plate is placed (or the cap worn), will suffice. In cold weather the air should be taken from a room or chamber equipped with a small

heating coil. About 2 ft. of tubing, which should be light, should be permanently connected with the helmet. There should be no air valve in reach of the worker, but the air control should be under the supervision of a foreman. The cost of maintaining this continuous air supply is a minor item.—Winslow, et al, *Public Health Reports*, March 5, 1920, 518-531, abstracted by Monthly Labor Review, U. S. B. of L. S., May, 1920, 154-156.

VALUE OF BRILLIANT-GREEN IN ELIMINATING ERRORS DUE TO THE ANAEROBES IN THE PRESUMPTIVE TEST FOR *B. COLI*

THEODORE C. MUER and ROBERT L. HARRIS,
Mount Prospect Laboratory,
Brooklyn, N. Y.

Read before Laboratory Section, American Public Health Association, at New Orleans, La.
October 28, 1919

A well tested method will always be especially a help to health officers for the reason that so many presentations are of matters still in the experimental stage. This brief article is based on a considerable use in practical work and the method may take its place among the pretty well established ones.

B RILLIANT-GREEN (commercial salt of Tetraethyldiamino-Triphenyl-Carbinol) has been used extensively for some time for "restraining" *B. coli* in broth and agar, and it may seem anomalous to recommend it for "favoring" its growth in bile, nevertheless, experiments conducted at Mt. Prospect Laboratory, by the authors, have proven it a valuable aid for the detection of the colon bacillus in water.

In fact it would seem as though the production of more than 10% of gas in brilliant-green lactose bile no longer is a "presumptive," but a "positive" test for *B. coli*. Using various dilutions of the dye it was found that a dilution of 1-10,000 not only prevented the growth of *B. welchii*, *B. sporogenes* and several other anaerobes which interfere with the growth of *B. coli*, but also had no restraining action on *B. coli*.

A study of table No. 1 will show *B. welchii* eliminated by a dilution of 1-30,000, *B. coli* requiring a dilution of 1-100 to show similar effect.

Comparisons were made with several other media using 129 samples of water of various degrees of pollution, as shown in tables Nos. II, III and IV:

TABLE NO. II

Comparison of results obtained, using five different samples of water, in Standard Lactose Beef Broth and Brilliant-Green Lactose Bile.

Sample No.	Standard Broth			Brilliant-Green Lactose-Bile		
	0.1	1.0	10 cc.	0.1	1.0	10 cc.
1	0	0	0	0	0	0
2	0	0	+	0	0	0
3	0	0	+	+	+	+
4	+	+	+	+	+	+
5	+	+	+	0	+	+

TABLE NO. III

Relative isolation from nine samples of water examined for *B. coli*, in the following four media:

Medium	Number of dilutions from which <i>B. coli</i> was isolated
Plain Lactose Peptone Bile..	19
Brilliant-Green Lactose Bile..	22
Lactose Beef Broth.....	14
Gentian-Violet (1-20,000) Lactose Broth	10

TABLE NO. IV

Comparison of 115 samples of water planted in both Plain Lactose Peptone Bile and Brilliant-Green Lactose Bile.

Medium	Number of dilutions from which <i>B. coli</i> was isolated	Number of dilutions from which <i>B. welchii</i> was isolated
Plain Lactose-Peptone Bile	34	18
Brilliant-Green Lactose Bile	51	0

NOTE: This table demonstrates the interference with the growth and test for *B. coli* in ordinary media by *B. welchii*, since *B. coli* must have been present as shown by the brilliant-green lactose bile.

TABLE NO. 1

Comparative growth of *B. coli* and *B. welchii* in Brilliant Green Lactose Bile using various dilutions of the dye

Amount of Brilliant-Green.....	1-100	1-200	1-350	1-500	1-700	1-1,000	1-2,000	1-3,500	1-5,000	Per cent gas after 7 days
<i>B. coli</i>	0	6	38	43	50	48	55	55	55	
Amount of Brilliant-Green.....	1-1,000	1-2,000	1-3,000	1-5,000	1-10,000	1-20,000	1-30,000	1-50,000	1-100,000	Per cent gas after 7 days
<i>B. welchii</i>	0	0	0	0	0	0	0	80	85	

In the foregoing comparisons all tubes showing 10% of gas, or more, were plated on litmus lactose agar and examined for typical red colonies. Those tubes showing gas and no red colonies were examined microscopically for typical large non-motile bacilli of the *B. welchii* type.

As a rule the colonies from the brilliant-green bile tubes were practically pure cultures of *B. coli*, and showed stronger acid production in that confirmatory litmus lactose agar plates were a mass of red colonies.

The composition of the medium used is as follows:

Distilled water	.....	1,000	grams.
Oxgall (dried)	....	50	"
Peptone	.....	10	"
Lactose	.....	10	"
Brilliant-green	.....	0.1	"

DIRECTIONS FOR PREPARATION

1. Heat 1 liter of distilled water in double boiler until water in outer vessel boils.
2. Add 50 grams of dried oxgall and 10 grams of peptone, stirring until all ingredients are dissolved.
3. Continue boiling for one hour.

4. Remove from flame and add 10 grams of powdered lactose.
5. Filter through cotton flannel until clear.
6. To each liter of the filtrate add 10 cc. of a 1% solution of brilliant-green.
7. Tube and sterilize in autoclave for 15 minutes at 15 lbs. pressure.

We have had satisfactory results with different brands and samples of dye obtained from Bayer & Co., Leitz & Co., and Merck & Co., all of New York City.

This medium has been used at Mt. Prospect Laboratory, the Mt. Kisco Laboratory and the Catskill Laboratory for the past nine months for all routine work and thus far we have failed to find any of the various strains of *B. welchii* to develop in it. It has proven itself particularly valuable in the examination of chlorinated waters.

Attempt by the authors to use brilliant-green, in suitable dilution in lactose beef broth, similarly to its use in bile, have thus far been unsuccessful, as there is not as great a range of selective inhibition in this medium.



TUBERCULOSIS CHRISTMAS SEAL CAMPAIGN



HEALTHY NEW YEAR

Here is the Tuberculosis Christmas Seal for 1920. No, it is not a Red Cross Seal.

For the first time in the history of "Seal-dom," the Red Cross is entirely left off the seal and the National Tuberculosis Association and its 1920 affiliated agencies are appealing to the American public for the support of the nation-wide anti-tuberculosis campaign on the strength of a Tuberculosis Christmas Seal, featuring the Double-Barred Cross, the international emblem of the fight against tuberculosis.

It will require every dollar that can be raised to support the growing tuberculosis movement in every state in the Union. The Christmas Seals and the Health Bonds, a new and unique feature of the Seal Sale, not only tell the story of tuberculosis and its prevention, but provide the sinews of war for the 1921-fight against this disease.

URGENT NEED FOR THE STANDARDIZATION OF LABORATORY WORK

ARTHUR LEDERER, M. D., C. P. H.

*P. A. Surgeon (Reserve), U. S. Public Health Service,
Chicago, Ill.*

Read before Laboratory Section, American Public Health Association, at San Francisco, Cal.,
September 13, 1920.

As a practical man familiar with the technique of the laboratory this author urges the need of establishing standards in laboratory practice. "This task will have to be faced in the near future," he writes, "And I believe that the A. P. H. A. is the proper organization to assume this important duty."

THE call for standardization of laboratory work has been voiced in the past by many who have become impressed with its necessity. The American Public Health Association deserves a great deal of credit for having made a successful beginning several years ago with the standardization of laboratory procedures pertaining to water, sewage and milk. At that time these called for the important consideration from the public health standpoint as the most potent mediums of infection. Our conception of what constitutes public health has in late years become much broadened. It is not so long ago that a public health laboratory doing sputums, Widal's, diphtheria cultures, urethral smears and water and milk analyses was considered as rendering maximum service to the community. Today the work of such a laboratory serving a large community includes all phases of sanitary bacteriology, clinical bacteriology, serology, pathological histology, sanitary chemistry, biological chemistry, food chemistry and toxicology. It is a fact that such a laboratory today is doing much work which formerly was done only in large hospitals and in commercial institutions. We accept a sound doctrine today that any disease in which communicability has not been definitely ruled out should

be a source of public concern. A good many sanitarians go still further advising free laboratory service to sick, indigent individuals even in cases which clearly do not endanger the public health. It is not the object of this paper to discuss the merits or demerits of this conception, but merely to emphasize that the signs of the times point in that direction. In spite of the fact that public health work and institutional hospital work have grown to be more and more alike in scope, it is a fact that on the whole the hospital pathologist is not interested in the American Public Health Association. The reason for this is apparent. There are comparatively few water and milk examinations to be made in hospitals and beyond that the pathologist receives no technical assistance and inspiration from the Association except it be in an occasional publication and from the "Laboratory Notes" of the Journal. This attitude of indifference could be changed if the Association would agitate the standardization of the procedures with which he is more closely concerned and which beyond doubt come within the province of public health in the most conservative sense of the meaning. No one will doubt for a moment for instance that the standardization of the Wassermann test in this country is a crying need.

The question arises as to how far we shall go in our attempts to standardize laboratory procedures. There is as much objection to going too far as there is to not going far enough. For instance, there is surely no need for standardizing tests such as the ones for albumin in urine or for free hydrochloric acid in gastric juice. While it is difficult to draw a distinct line it should be recognized that the bacteriological and serological procedures of a public health aspect should be standardized first. This includes the Wassermann and allied complement tests, also the identification of the meningococcus, pneumococcus, and the miscellaneous streptococci and the isolation of the intestinal pathogenic organisms from the excreta. Other tests may be added as the work of standardization proceeds and as necessity may indicate. For the present the procedures mentioned would constitute a good nucleus to start out from. No one should under-estimate the difficulty of attempting to standardize the Wassermann test. First of all it will be necessary to decide on the method to be employed. The second big question is the one of reagents and this pertains not only to the complement fixation tests, but to all serologic laboratory procedures as well. Definite instructions should be given for the preparation of antigens and amboceptor. In order to insure uniformity of products, it is important that they should be put out by one reliable, preferably non-commercial institution on a sufficiently large scale to supply the demand of the entire country. Providing that the appropriation permits, I would like to see the Hygienic Laboratory of the U. S. Public Health Service take charge of the production of the amboceptor and antigens for the miscellaneous complement fixation tests. The importance of uniformity of the antigens is so great as to out-weigh consideration of a commercial nature. The question of the supply of uniformly agglutinating

and precipitating sera is not quite so pressing.

Attention should be directed to the excellent reports which appear from time to time of the special committee of the British Medical Research Committee functioning under the National Health Insurance Act upon the standardization of pathological methods. This special committee has published, within the last few years, several bulletins on the laboratory diagnosis of venereal diseases which are admirable for their thoroughness of detail. The preparation of these reports is in the hands of medical laboratory men for it is recognized that the veracity of the results of the tests can only be gauged by corresponding clinical observations. It is very important not to lose sight of the fact that the standardization of such tests as the Wassermann is not purely a laboratory matter where a few technically trained men can get together and arbitrarily decide on the details. The closest clinical coöperation is necessary for after all while it is important to have one uniform method, it is still more important to employ a method which furnishes the clinician with the most accurate information. The Special English Research Committee was not empowered to standardize laboratory procedures, but to "consider how far it may be practicable and desirable to obtain the standardization of routine pathological methods." The Wassermann test was the first to be considered. The results of this inquiry were two reports; one on the technical features and another on the diagnostic value of the test. The committee received coöperation from the Canadian Army Medical Corps and, to some extent, from the U. S. Army Medical Corps. The committee expressed the opinion that obvious advantages are to be obtained by the standardization of approved methods. At present the value of the diagnosis provided by any given laboratory cannot be

estimated. Two committees considered two alternative courses. One was to recommend a demand that every report upon Wassermann tests made officially for military or public purposes, should include a statement of the method employed. The second was to define precisely the procedure of a standard method, setting limits upon minor variations of technique and to recommend that all official tests should be made by this method only. It was emphasized that direct scientific advantage would be gained if one standardized method would obtain sole recognition, but that in the present state of knowledge it was impossible to lay down with confidence the lines of optimum procedure for the performance of the test. However, it was recommended that for official use only these methods should be accepted which conform with the original Wassermann test. In the absence of a standardized method, the importance of a standardized antigen and hemolytic amboceptor was pointed out. The opinion was expressed that the laboratories in which the Wassermann test is performed for public service should be few rather than many. On the whole one is impressed with the fact that the committee is very strongly in favor of adopting the original Wassermann as the official method.

Another publication of the British Research Committee discusses in detail the various methods of diagnosis of gonococcal infections and the detection of spirochetes of syphilis. We may well look forward with pleasure to the publication of other bulletins from this special committee. No laboratory man in this country can afford to overlook them. A large number of other excellent publications of the Medical Research Committee deal with miscellaneous bacteriological and epidemiological subjects.

It must not be forgotten that laboratory work in England is more centralized than it is in this country. We have here public health laboratories which are

far removed from each other; we have laboratories in small communities conducted by workers qualified in technique, but not competent in the refinements of the test nor in interpretations. Conditions here are such as to call for standardization more strongly than is the case in England.

Some commendable work on the standardization of laboratory procedures was done in this country by the army laboratories during the great war. We are also indebted to Dr. Kolmer and others for much valuable research on the standardization of the Wassermann test, all of which will be found to be of great assistance at the time when the tasks of standardization will be faced.

One word as to the possible argument that standardization of the test, such as the Wassermann test, may discourage research. I do not believe that this constitutes a valid objection. Standardization does not imply that the test as officially recommended will be adhered to rigidly from year to year. Scientific truth seekers will always contribute their bit and it will be up to the governing body to investigate each piece of research with the view to incorporation or substitution. The body having standardization in charge can of necessity never make a final report. This deducts in no way from the great importance of the work.

No standardization would be complete without a standard report card which will embody directions as to collection of material and mailing, precise data on the history and an appropriate column for the insertion of the results of the test. A great deal of judgment is required to obtain a form which will be satisfactory for all purposes. There is no reason why such a blank should not be made to prove equally satisfactory to public health laboratories as well as to purely clinical laboratories. As a general rule the blank calling for the minimum amount of pertinent information and the

minimum number of insertions is the most satisfactory. The busy physician prefers the insertion of crosses or the underscoring of printed answers to information required in longhand.

The organization to accomplish standardization of the most important serologic and bacteriologic procedures which have a bearing on public health is no small matter and must be approached with caution. However, the task will have to be faced sometime in the near future and may as well be faced now. I believe that the American Health Association is the proper organization to assume this important duty; on the other hand the Association should not hesitate to call on anyone else outside of its membership for coöperation. There are many men, particularly in the medical profession, who are not members of the Association, but whose work and counsel along these lines would prove valuable. It would first be necessary to establish in a broad sense the policy to

be followed. Any committee appointed for this purpose must be allowed the widest latitude in order to be able to accomplish something worth while. Once the policy is established the details can be taken care of by sub-committees appointed by the chairman of the main committee, which might perhaps be named the "Committee on the Standardization of Pathological Methods" similar to the designation of the British organization. It has been experienced in the past that men called upon by the American Public Health Association on similar previous occasions have given freely of their time and talents and they will do so again. The function of this committee which may change in its composition will not cease since proper cognizance must be taken of the continuous research particularly in serology. I believe that early action by this Association will be indorsed and heartily appreciated by everyone concerned, particularly by the laboratory workers and public health officials.



Unified Medical Service in Wales.—Two points are brought out in the Report of the Welsh Consultative Council: (1) there is an entire lack of organization in medical service; (2) the personnel and institutions already in existence, if properly organized, would go far to meet the needs of an efficient service. A plan is proposed whereby this organization might be effected. The country is divided into medical areas, each area being subdivided into districts. In each district would be established an institute acting as a headquarters for six types of service: (1) general hospital; (2) maternity and infant welfare center with tuberculosis and other clinics; (3) medical institute with laboratory, library and facil-

ities for meetings; (4) center from which nursing service and health visiting would be directed; (5) base for ambulance service, and (6) center for public health administration. Smaller secondary institutes would be required in certain localities. These institutes would depend on the main institute of the district which in turn would be based on the medical center for the area. The Report indicates that the plan is essentially practical inasmuch as very little modification of existing services would be necessary. The plan should be a valuable one for it makes use of all available medical service, coördinates it into a workable organization and indicates where addition would be needed.—*Lancet*, May 29, 1920. (H. N. C.)

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

Publication Office: 124 W. Polk Street, Chicago, Ill.

EDITORIAL OFFICE: 169 MASSACHUSETTS AVE., BOSTON, MASS.

A. W. HEDRICH, C. P. H., Editor

J. RITCHIE, Jr., Associate Editor

Editorial Assistants

E. R. HAYHURST, M.D.

P. M. HOLMES, M.D.

FRANCIS H. SLACK, M.D.

DAVID GREENBERG

JAMES A. TOBEY

JAMES M. STRANG

M. P. HORWOOD, M.S.

HOMER N. CALVER

Board of Advisory Editors

PETER H. BRYCE, M.D., Ottawa, Canada

PROF. M. J. ROSENAU, Boston, Mass.

CHARLES V. CHAPIN, M.D., Providence, R. I.

PROF. W. T. SEDGWICK, Cambridge, Mass.

EUGENE R. KELLEY, M.D., Boston, Mass.

PROF. GEORGE C. WHIFFLE, Cambridge, Mass.

W. A. EVANS, M.D., Chicago, Ill.

PROF. S. M. GUNN, Paris, France.

All expressions of opinion and all statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

NOTICE TO SUBSCRIBERS: Subscription Price, payable in advance, \$4.00 per year for United States and possessions; \$4.60 for Canada and other foreign countries. Single copies, 50 cents postpaid. Membership in the American Public Health Association, including subscription to Journal, \$6.00 per year. In change of address please give both old and new address, and mail before the 26th of the month to take effect with the current issue. Mailing Date, 20th of each month. Advertisements accepted only when commendable, and worth while both to reader and advertiser. News items, interesting clippings and illustrations are gladly received, together with name of sender. Copyright, 1919, by A. W. Hedrich.

PROBLEM OF THE RAT.

Communications of importance presented at the meeting in San Francisco and published in this issue of the JOURNAL bring to attention that most imperative health procedure, the extermination of the rat. This should be taken up by our states, municipalities and communities as a serious undertaking, because this common rodent is an animal that harbors the flea that communicates bubonic plague to man. It should be taken up betimes, because the plague is truly knocking at our doors. While the Quarantine Service of the country will watch the human immigrants, the disease may enter unheralded through undesirable rodent visitors and become widely disseminated among native rats before its presence is announced by human cases. At the time when the first human case is announced it may be taken for granted that the native rat population is largely infected, with potentialities for widespread further infection and the certainty of large expenditures in warfare on the flea, the rat and the disease. This has been well attested by experience.

The fight against the rat is no children's pastime to be accompanied by rhyming slogans to make it interesting; it is truly work for men to be undertaken betimes in our ports and to be carried on in sober, serious earnest.

Plague is not an imaginary danger, for while there is the suggestion of a tropical Orient in its rapid course, it has shown that it has power for evil in temperate climates. There is no need of panic or excitement, for proper measures calmly undertaken can discount all its possible ills.

How troublesome the plague can be has already been demonstrated in this country. In California a decade ago it gained a foothold, there were some human victims, and animal hosts became infected. The experience of the West Coast is testimony of the tenacity with which it clings.

Those who are familiar with the West Coast story—those who are not may learn of its serious aspects by reading the Plague Symposium a few pages before this one in the JOURNAL—will realize how the flea may change its host, and how with a native wild animal will have opportunities for travel. The recent “flare-up” in California shows how the disease may be quiescent between active outbursts. It is fortunate that in the Far West it has been the stay-at-home ground squirrel that has been the selected host of the flea. On other coasts more rapid travelers may readily lend themselves to the distribution of the disease to our discomfiture, pecuniary loss and potential danger.

It is unfortunate that so many American citizens, keen-sighted as they are in business operations, do not become awakened to the need of prevention till circumstances enforce the vastly greater undertaking of the cure. We apparently prefer the dramatic motor engine whizzing through the streets towards the fire and the excitement of the conflagration to the dull prevention of fireproof or fire-resisting construction. We are alive in an instant with a wealth of invention when disease is really in our midst, and pour out money like water when the mischief has been started, but we are largely uninterested in the monotonous routine processes that will ward off disease. The value of prophylaxis against typhoid fever was shown indisputably in the recent war, but the application of it and of good sanitation in preventing this disease at home is very much neglected. It is the same with the rat, we are seemingly indifferent to its dangers.

Those who will read the stirring conclusions of Dr. Kellogg in these pages will realize how pressing is the situation. It is one that calls for preparedness in our ports. The means for this are simple, to exterminate the rats in our homes, warehouses and wharves and to keep them away in the future by better building construction. The process of extermination is simple, but it is not so easy, for rats, having lived by their wits for untold centuries have developed remarkable intelligence. Having lived in the homes of men they are to a large extent trap-shy, and keen-scented as they are it will require every artifice against them. In California poison is employed against the ground squirrels as a practicable means of destroying these hosts of the plague flea.

Rat-proofing houses and storage places will deprive rodents of their hiding places. This is costly, but it is a measure of economy in preventing the waste of the hundred millions of dollars each year that these animals are said to eat or destroy. Proper care of family foods and household wastes would starve them so that they could no longer live in the homes of men. This, however, demands an advanced state of public health education. In the meantime it lies with the health authorities to take such public measures as may be within their power towards improving the situation, measures which will have for their aim the extermination of the rat.

VARIETIES OF CITY HEALTH OFFICERS

A recently issued reprint of the U. S. Public Health Service presents a list of the health officers for 1920 in cities of more than 10,000 population in this country. From the point of view of standardization, an analysis of this list brings out some interesting facts. It is evident that much is still to be accomplished in this direction, if indeed a real start has yet been made.

According to the 1917 estimates of the Census Bureau there are 708 communities to be listed with greater population than 10,000, and of these 685, or about 96 percent have health officials. There are about 60 different titles employed, which may suggest the desirability of having some standard one. Of these health officials, 536 or about 78 percent have the degree, M. D., and 266 or about 38 percent are on a full-time basis. It is worth a thought that today only a little more than one-third of our American cities of 10,000 inhabitants have a full-time health officer.

Of the officers with the degree, M. D., three have also a D. P. H., one a C. P. H. and one an LL. B. Of the 149 laymen who are health officials three have the D. P. H., one the P. H. D., one has C. E., one is a pharmacist, one a nurse and five are veterinary doctors. Degrees are not specified for any of the others. The question as to what extent a college degree shall be required for health officers is one to which there are two sides, but it is evident from these facts that there exist in the country no well defined requirements in the matter.

A consideration of health officers with reference to whether they are full-time or part-time leads to the showing that there is quite as little system here as in the other particulars noted.

Alabama and South Carolina are the only states having nothing but full-time city health officials. Arizona, Delaware, Idaho, Nevada, Oklahoma, Oregon, and Wyoming have no full-time city health officials. In West Virginia and Indiana only 10 percent of the health officials are on a full-time basis and in Mississippi only 12 percent. New Jersey leads in full-time health officials with 71 percent, Pennsylvania has 64 percent and Massachusetts 54 percent. Then come Michigan with 42 percent, Ohio with 32 percent, Connecticut with 30 percent and California with 27 percent. The Empire State of New York has only 19 percent full-time city health officials, Texas only 16 percent and Illinois only 20 percent. In New York every health official is an M. D., as is also the case in Connecticut. In California, Illinois, Indiana, Michigan and Texas more than 95 percent of the health officials are M. Ds. In Pennsylvania only 26 percent have this degree, in Massachusetts only 32 percent and in New Jersey only 40 percent. Of the physicians only about 26 percent are on a full-time basis; of the laymen, about 80 percent are full-time officials.

It is true, of course, that there are differences of situation, temperament and education of populations that make the local problems of health officers different in different places, but vagaries in local legislation that lead to such divergences as these need not be. The health of the people is America's strongest asset, and it behooves us to formulate the requirements of the officers to whom this health is confided in some fairly systematic and logical manner.

J. A. T.

REQUEST FOR BACK NUMBERS OF THE TRANSACTIONS

The American Public Health Association desires to secure copies of volumes lacking in its sales series of TRANSACTIONS to fill orders for sets that have been received. It needs copies of Volumes III, V, VI, and XXVIII. Any member wishing to dispose of any of these volumes will please address the Secretary, A. P. H. A., 169 Massachusetts Avenue, Boston 17, Mass.

BOOKS AND REPORTS REVIEWED

Applied Anatomy and Kinesiology—The Mechanism of Muscular Movement. *Wilbur Pardou Bowen, M. S. Second edition. Philadelphia: Lea & Febiger. Pp. 334. Price, \$3.50.*

In view of the interest of the world of today in physical education, examination and training the work of Dr. Bowen is timely. The book comes from a well-known publisher and is one of *The Physical Education Series*, of which R. Tait McKenzie, M. D., of Philadelphia is editor.

This book will find a useful field in a number of ways. It has a good deal of anatomy; some discussion of mechanics, especially with reference to the movements of the bones by the muscles; it enters somewhat into the field of hygiene and devotes much attention to gymnastics. For the full performance of his duty the physician may readily need a better understanding of muscular action that is given in his preparatory studies or his experience in the hospitals, and here he will find presented in convenient form studies of the seventy-five pairs of muscles that are involved in general posture in the usual—and even the unusual—movements of the body.

The various topics are taken up intelligently, the language is not too technical for the general reader and there are desirable incidentals, such as a table of sines, for those who wish to go a little more deeply into the details, mathematical and scientific, of the various problems. There is much in the volume on muscular control, voluntary and automatic, quite a bit about the nervous system and detailed considerations of the offices and action of the more important muscles, which are taken in groups and are accompanied by discussions of the related gymnastic exercises. There is a chapter on breathing and another on the upright position of man with its advantages and disadvantages. In this matter there is the explanation of that reversion to an ancestral type in the athlete's crouching start for the race.

Quizzes at the ends of the chapters fit the volume for text-book purposes, and a

bibliography is another step in the same direction. The book is well illustrated.



Diagnostic Methods. *Ralph W. Webster, M.D., Ph.D. 6th edition. Philadelphia: P. Blakiston's Son & Co. 1920. Pp. 844. Price, \$9.00.*

It is now four years since the last edition of this popular laboratory book appeared. Nearly one hundred pages of new text have been added in the sixth edition. The illustrations remain unchanged. The new material inserted pertains mostly to the recent advances in the science of blood and urine chemistry. The important work of Folin and his associates has been incorporated. The section dealing with the reaction of the blood has been entirely rewritten to bring it up to the present day conception of hydrogen—ion concentration. The functional renal diagnosis and Mosenthal's test meal for renal function are exhaustively treated. In the discussion of parasitology of the blood a full account of the *Leptospira ictero-hemorrhagica* is given. The coagulo reaction of Hirschfeld and Klinger is incorporated among the serum reactions for syphilis. The discussion also includes the gas bacillus of Welch which plays such an important part in the study of wound infections.

It may have been well to include a full description of routine laboratory procedures such as the typing of pneumococci and the detection of lead in excretions. The late methods for the determination of basal metabolism are not touched upon. A few additional appropriate illustrations, particularly in the chapter dealing with the Wassermann reaction, would add interest to the text.

A very desirable feature of the book is the exhaustive list of references which is to be found at the foot of each page. In this respect Webster's book appeals to the research worker more strongly than do most other books covering the same ground. The new edition can be heartily recommended to the laboratory profession.

ARTHUR LEDERER, M. D.

Hygiene: Dental and General. *Clair Elsmere Turner*. St. Louis: C. V. Mosby Co., 1920. Pp. 400. Price, \$4.00.

A beneficently contagious interest in public health has spread in a great many directions from Professor Sedgwick's laboratory at the Massachusetts Institute of Technology. One of the secondary foci of infection was established some time ago in the Tufts College Dental School and has spread, through the interest of prominent dentists, to the whole profession. The leading schools of dentistry have at present a standardized course in Hygiene which is equal, so far as emphasis on social prevention goes, to the instruction given on the same line in many schools of medicine. This development has been made possible largely through the interest and coöperation of the staff of the Department of Biology and Public Health at Technology; and the author of this new book on "Hygiene: Dental and General" holds assistant professorship in both the Institute of Technology and the Tufts College Medical and Dental School.

The course in hygiene here presented is designed to give to the dentist a knowledge of the laws of personal hygiene which he can apply in the instruction of his patients and a knowledge of the general principles of public health which will assist him to assume a position of intelligent leadership as a citizen. After a very brief chapter on Dental Hygiene as such, in which the limitations of orthodontia are alluded to and the importance of breast feeding in developing the teeth is discussed, Professor Turner passes to the four main fields of physiology, assimilation, action, sensation and reproduction, and discusses each from the hygienic standpoint. The treatment of dietary hygiene might to advantage be amplified and made more practical; but the chapters on exercise (of which Posture is properly held to be the primary element) and on the Central Nervous System are original in conception and clear and effective in presentation. The chapter on Heredity may prove a little deep for the average student and the table of diseases subject to Mendelian heredity on p. 89 contains some rather doubtful items, including diabetes, which is classified as a kidney disease.

Professor Turner then passes to the com-

municable diseases, with a good historical chapter, a somewhat technical discussion of immunity, a chapter on oral prophylaxis (in which focal infections are discussed with sanity and balance), and a chapter on communicable diseases, wisely devoted chiefly to tuberculosis, venereal disease and the common cold, the rarer acute contagia being covered by the American Public Health Association Committee Report, reproduced as an appendix. The book closes with a series of chapters on the broader sanitary and administrative problems of public health, food control, water supply, sewage disposal, ventilation, school hygiene, industrial hygiene and health department organization.

It is a little hard on the pioneer figure in Dental Hygiene, Dr. A. C. Fones of Bridgeport, to call him A. L. Fownes on p. 153 and A. E. Fones on p. 286. In general, however, the book is well edited. Professor Turner presents a clear and well-balanced view of the fields of personal hygiene and public health as they bear upon the work of the dentist; and his book, the first of its kind in this field, should prove of the greatest value in mobilizing the dental profession of the country in the wider campaign for the prevention of preventable disease.

C.-E. A. WINSLOW.

+

Mother and Child.—This is a magazine devoted to the health of these important members of the family and the community, published by the American Child Hygiene Association. It is issued every other month, from the office of the Association, 1211 Cathedral street, Baltimore, Md. The October issue, Vol. I, No. 3, contains articles on "Children in Central Europe," by Julia C. Lathrop; "The New-born Infant," by J. W. Ballantyne, M. D., of the Edinburgh Royal Maternity Hospital; "Salvaging Crippled Children," by Mary Perkins Ivey, R. N.; "Preventing Decay in Children's Teeth," by Henry Larned Keith Shaw, M. D., and "High School Nutrition Classes," by Mrs. Ira Couch Wood, together with editorials, reviews, news notes and items of popular interest. The little magazine is well printed, well illustrated and admirably adapted to the purpose of interesting the public in child hygiene.

The Newer Methods of Blood and Urine Chemistry. R. B. H. Gradwohl, M.D., and A. J. Blaivas, St. Louis, Mo. C. V. Mosby Company. 1920. Pp. 418. Illustrated. Price \$5.00.

The second edition of this well known book covers nearly two hundred pages more than are found in the first edition. It is divided into three parts. Part I, entitled "Technique of Blood Chemistry," is essentially the same as that in the early edition excepting that a brief chapter on "Lipoids" has been added. The determination of the acetone bodies is more fully discussed. Part II deals with the "Chemical Analysis of Urine." In addition to the Hellige colorimeter, the author furnishes a description of the Duboscq and Bock-Benedict colorimeters. The greatest number of changes and additions are found in Part III, which deals with "Blood Findings and Their Interpretation."

The chapter on "Blood Sugar," covering 71 pages (35 in the first edition), contains the latest data on the sugar contents in tissues, sugar tolerance and metabolism. The relation of blood chemistry to nephritis and to surgical procedures is also thoroughly discussed.

An entirely new chapter on "Basal Metabolism" has been incorporated. This chapter is of particular interest to the clinician, since it opens up a remarkably interesting field in diagnosis. It is fortunate that the author succeeded in incorporating in an "Appendix" Folin's and Wu's new methods of blood examination which require much smaller amounts of blood for complete analyses. The value of the book is greatly enhanced by the insertion of this recent piece of literature.

A number of illustrations have been added and the text is remarkably free from typographical errors. The authors have succeeded in maintaining a high standard. The publication will assuredly hold its place among the indispensable laboratory reference books.

ARTHUR LEDERER, M.D.

†

Palestine's first medical Journal, *Harefoah (Medicine)*, has made its appearance, published by the Jewish Medical Association of Palestine. It is a quarterly and dedicated to the memory of Jewish physicians

and nurses who laid down their lives in the years of upheaval in the Holy Land. The purposes of the journal and the medical association that is publishing it are to strengthen and coöminate the medical forces of the country, to collaborate with doctors outside of Palestine, to prepare a soil for Jewish scientific work and to help in the establishment of a Jewish university.

†

Digest of Programs of National Organizations Carrying on Some Phase of Child Welfare. Compiled by The American Child Hygiene Association. Mss. 69 pp.

In connection with its convention at St. Louis, October 11-13, 1920, the American Child Hygiene Association has prepared a digest of programs of national organizations that carry on some phase of child welfare. This is a work of correlation much needed in almost every branch of public service, and excellently well accomplished in this instance. A manifolded pamphlet of 69 pages is the result.

From this it appears that no less than 66 different country-wide organizations have one or more departments devoted to the benefit of children, including patriotic, home economics and health associations, boy scouts and camp fire girls, women's club federations, suffrage associations, societies undertaking public health nursing or the study of special diseases, playground associations, nutritional clinics, and not forgetting such organizations as the Knights of Columbus, the Council of Jewish Women and the Y. W. H. A. Kindergarten associations, day nurseries, settlement associations, the Russell Sage Foundation, Salvation Army and a number of government departments all have more or less interest in this work.

The pamphlet outlines for each of these interested associations its official name, its home address and its program. Anyone who is interested in the welfare of children will find in this pamphlet a mine of information. So far as the associations themselves are concerned, this plain statement of the lines along which they are working, or intending to work, should be of the greatest benefit towards coöperation, coördination and the avoidance of overlapping.

Report of the Health and Sanitary Survey of the City of New Orleans, 1918-1919. Conducted jointly by the Board of Health for the Parish of Orleans and the City of New Orleans and the Metropolitan Life Insurance Company of New York. Inspections and compilations by Walter L. Dodd.

To those who have visited the picturesque city of New Orleans, or to those who are familiar with the previous association of New Orleans with yellow fever and bubonic plague, this report will be of interest. It will also be interesting to public health and social workers in general, since it represents a thorough study of the health conditions and health organization of a large and important American community.

The report considers first the early sanitary history of New Orleans, describing the prevalence of yellow fever, cholera, smallpox and bubonic plague and the steps that were taken to eradicate these diseases. The development of the present system of health organization is also carefully traced.

New Orleans has not grown very rapidly. In 1910 its population was 339,075. The population of the city has increased in recent decades primarily through interstate migration, so that the native-born element is very large. The principal foreign elements are Germans, Italians, Irish and French in the order named.

The other vital statistics of the city are considered separately. There are separate chapters for measles, whooping cough, scarlet fever, diphtheria, typhoid fever and tuberculosis. In each case the specific death rate for each disease is given from 1880-1917. Comparisons of these rates are made with those that prevailed in other cities in various sections of the country. Studies in race, sex, age and color distribution are also made. It is shown that communicable diseases are not completely reported. It is estimated that at least 15% of measles cases are not reported; that the reporting of cases of whooping cough is very poor; that the number of cases of typhoid fever reported is incomplete, and that the same is true for tuberculosis. The number of deaths from diphtheria is considered too high. From 1911 to 1916 there were 458 deaths from diphtheria as compared with 302 deaths from measles, whooping cough and scarlet fever combined. The reasons

given are that an early diagnosis is not made, and that physicians do not employ the laboratory facilities which are available to aid them. It is recommended that all diphtheria contacts should be examined bacteriologically and that the Shick test and the toxin-antitoxin mixture should be employed on children of the pre-school age. The death rate from scarlet fever is exceedingly low, being in the six years from 1911 to 1916 only 21.

Although the specific death rate from typhoid fever has been above 21.0 since 1914, the actual death rate from this cause is probably only one-half as great. The higher rate is due to the large number of non-residents who die of typhoid fever in the city hospitals after they have been brought to the city for treatment. Thus in 1917, of 87 deaths from typhoid fever, 40 were those of non-residents.

The tuberculosis death rate is very high. Since 1910 the specific death rate from this disease has varied between 236.0 and 290.2. The latter rate prevailed in 1917. The rate for the whites in that year was 191.8 and for the negroes 570.0. In 1910 the negro element of the population comprised 26.3%. There are many reasons for the great prevalence of tuberculosis. In the first place very little is done to combat the disease. There is only one tuberculosis dispensary, one which is operated by the Louisiana Anti-Tuberculosis League. The cases that appear for examination are usually advanced. Only one nurse is employed to visit patients in the home. There is a small camp at which incipient cases of tuberculosis are cared for. There is, however, no physician in attendance. Children under eight years of age and negroes are not accommodated. There are no day camps for children of tuberculous families, nor are there any open-air schools or classes. Public health education is entirely neglected. Hospital facilities for the tuberculous are inadequate. Sputum cups are not provided, and the number of sputum samples examined is small. The housing problem in the city is also serious.

Approximately 15,000 gallons of milk are consumed daily in New Orleans. This milk comes from farms within a radius of 100 miles from the city. On account of the lack of cooling at the point of production

or in trains, 100,000 gallons of milk sourced in 1917 before arriving in the city. Only one-third of the milk is pasteurized by the holding method. Sixty percent of the milk is not pasteurized at all, and 10% is pasteurized by the flash method. Pasteurization is not supervised or checked. Milk handlers are not medically examined. None of the milk is graded.

The water supply of the city is excellent. The old cisterns and other mosquito-breeding places have in the main been abandoned. The raw water is obtained from the Mississippi River, then is passed through grit chambers, then coagulated with lime and sulphate of iron, and finally treated on mechanical filters. The filtered water is disinfected with liquid chlorine as it is pumped into the mains. The daily water consumption is 33,000,000 gallons. The water supply is under constant expert control and supervision. New Orleans has learned the value of a safe and adequate water supply.

Similarly the sewerage and drainage systems are excellent. There are 497 miles of sewers in use, serving nearly all of the built-up sections of the city. Privies which abounded in the city only 15 years ago have materially decreased. The present method of disposal consists in discharging the coarsely screened sewage by means of high lift pumps into the plentiful waters of the Mississippi.

The refuse from the city, after collection, is used for filling in low places. Although the rubbish is supposed to be separated from the garbage, this is unsatisfactorily done. In only about one-half of the cases is the garbage stored in covered, water-tight cans. Garbage from large hotels is collected by private scavengers and fed to hogs. The collecting wagons are frequently uncovered, so that nuisances from this source are common. All forms of refuse in the district known as Algiers are collected in a special wagon, hauled to the incinerator and burned. Large dead animals are removed by a private rendering company and treated for economic gain.

The health department is organized very

unsatisfactorily. The department has no public health nurses and only three physicians who serve on a part time basis. The medical inspection of school children is not well administered. The reporting of births is incomplete, so that no accurate idea of the infant mortality rate is available. Infant and child welfare work are almost entirely neglected. Tuberculosis, the sanitary control of the milk supply, the control of health conditions in industry, are also seriously neglected. Public health education is not conducted. The laboratories of the health department have an inadequate personnel and the number of specimens examined is entirely too small. The bulk of the laboratory work consists of tests for diphtheria, tuberculosis, typhoid and malaria. The records of the department are kept unsatisfactorily. There are 57 sanitary inspectors, only 15 of whom are engaged in the control of communicable disease. No epidemiologist is employed. The per capita expenditure for health work in 1917 was 36 cents.

From the foregoing summary it is evident that the study has been very complete and that New Orleans desires to know the truth as a foundation towards establishing a better condition of affairs. The report has been so closely considered that one is a bit surprised to find in it no statement of the general mortality rate, no report on food handling establishments and no table of contents.

MURRAY P. HORWOOD, M. S.



M. P. H. A. NEWS

Maine now has a health journal of its own. In September the M. P. H. A. News, the magazine of the Maine Public Health Association, made its initial appearance and will be issued each month hereafter. The paper contains news articles on health work all over the state; appointments of health workers; reports of conference and plans for growth of the Association; editorials; pictures and cartoons. The M. P. H. A. News is circulated among the members of the Association.

ASSOCIATION NEWS

HEALTH EMPLOYMENT BUREAU HELP WANTED

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the first of each month. In answering keyed advertisements, please mail replies separately and to editorial office in Boston, Mass.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Experienced woman laboratory technician who can handle Malaria, Hookworm, Intestinal parasites, Diphtheria, Widal, smear test for Gonorrhea, Rabies, and Milk, both bacteriological and chemical. Salary about \$150 per month. Address 398, W. F. W., care of this Journal, Boston address.

\$2,500 a year for recent M. D. who can teach Hygiene and carry on private research in bacteriology or serology. Address 399, G. M. D., care of this Journal, Boston address.

Chief Bacteriologist, Diagnostic Laboratory, Illinois State Department of Public Health. Salary, \$2,400 to start, with good prospect of increase the coming year. The degree of M. D. desired but not required. Applicant should have working knowledge of Public Health problems in serology, bacteriology, and microscopical pathology. Position is under Civil Service, temporary appointment to be made immediately, and permanent appointment to depend upon ability to pass Civil Service examination. For further information, address Dr. C. St. Clair Drake, Director, State Department Public Health, Springfield, Illinois.

Wanted: Two assistant sanitary engineers for the Sanitary Engineering Division of the State Department of Health. Salaries ranging from \$1,800 to \$2,500 to start. Recent graduates with sanitary engineering training can qualify. For additional information, address E. S. Tisdale, Director and Chief Engineer, West Virginia State Department of Health, Charleston, W. Va.

School of Public Health desires woman bacteriologist to take charge of Public Health Laboratory and assist in teaching, full time position. Salary \$1,800 as minimum, depending on qualifications. State fully age and experience. Address 406,

H. A. R., care of this Journal, Boston address.

Wanted: Public Health Nurses for American Red Cross Chapter in Michigan. Address 140 North Saginaw Street, Pontiac, Michigan.

Supervising nurse, Protestant faith, who has had course in public health nursing, and is capable of handling some phases of pioneer work. Must be qualified to handle staff of five nurses. Organization comparatively new. Salary \$150 per month. Address 377, J. G., care of this Journal, Boston address.

Woman laboratory worker for health department of town of 30,000 near New York. Usual culture work and milk and water analysis. Address 408, L. B. H., care of this Journal, Boston address, stating experience, salary expected, etc.

Wanted: An experienced laboratory technician. Applicants should give in first letter a detailed account of their experience in laboratory work and state salary expected. Address 410, V. H. C., care of this Journal, Boston address.

Full time county health officer in West Virginia; population approximately 45,000; salary, \$3,000 and travel expenses. Address Director, Rural Sanitation, State Department of Health, Charleston, W. Va.

✦

POSITIONS WANTED

Position - wanted announcements will henceforth be carried in this column. The charge is \$2 per insertion. Copy should be received at this office, by the first of the month.

Am at liberty to accept position as health officer or to do general sanitary and publicity work about October 1. Now have the rank of Major in Reserve Corp and commission in public health service as P. A. Surgeon. Further details by correspondence. Address 128, W. W. E., care of this Journal, Boston address.

Sanitary adviser for a food products company desires a change. Can show experience in municipal and industrial sanitation; licensed health officer. Further details by correspondence. Salary \$2,700. Address 133, G. J., care of this Journal, Boston, address.

Young woman graduate of a teachers' college, B. S. degree, with five years' experience in public health laboratory work (two as director of a city laboratory), would like a position in public health education, or an executive position in a health department. Has had some experience in public speaking. Present salary \$2,800. Further details on request. Address 131, S. P. M., care of this Journal, Boston address.

Captain, Construction Division, U. S. Army, about to be discharged, desires position in Public Health work, or as Supt. of Water Works or Sewage Plant. Have B. S. in chemistry and D. V. M., with 13 years experience in laboratory work; Milk and Meat Inspection work; Supt. of Water and Sewage Plants. Address 130 P. R. C., care of this Journal, Boston address.

Licensed Health Officer and Camp Sanitary Inspector of the U. S. Army about to sever connections with the army is anxious to make connections with large industrial corporation, Health Commission of city, progressive town or Sanitary Officer of

steamship line. Is graduate physician and surgeon of fifteen years' experience; licensed to practice in New York, New Jersey and Massachusetts. Would be willing to travel in the United States or foreign countries. Address Dundas R. Campbell Major, Medical Corps, Camp Devens, Mass.

Wanted: Administrative and medical work in public health or municipal hospital in locality desiring progressive development of municipal health facilities. Qualifications: 2½ years' experience in municipal hospital and health administration; licensed under Pennsylvania State Board, and National Board of Medical Examiners; good references. Address: 134, B. L. H., care of this Journal, Boston address.

Woman of maturity, now assistant bacteriologist in a large health laboratory, desires a change. Would like serology and microscopic diagnosis for a venereal clinic, hospital, or group of physicians. Reliable Wassermann routine. Address 135, H. B., care of this Journal, Boston address.



NEWLY ELECTED OFFICERS

At the San Francisco meeting of the Association, on September 15, 1920, the following officers of the A. P. H. A., to serve during the ensuing year, were elected:

President, Dr. M. P. Ravenel, Columbia, Mo.

First vice-president, Dr. T. B. Beatty, Salt Lake City, Utah.

Second vice-president, Dr. L. I. Dublin, New York City.

Third vice-president, Dr. W. C. Hassler, San Francisco, Cal.

Secretary, Mr. A. W. Hedrich, Boston, Mass.

Treasurer, Dr. Roger I. Lee, Cambridge, Mass.

The Executive Committee remains unchanged, the elected members whose terms expire this year being reelected, Dr. Bryce to fill the unexpired term of Dr. Ravenel, who becomes a member *ex officio*, and the others with terms expiring in 1923. The Committee now stands: Dr. M. P. Ravenel (1921), Dr. Roger I. Lee (1921), A. W. Hedrich (1921), Dr. W. A. Evans (1921),

Dr. A. J. McLaughlin (1921), Dr. Peter H. Bryce (1922), Lee K. Frankel, Ph. D., (1922), Dr. W. S. Rankin (1923), Dr. Charles J. Hastings (1923).

The Section officers are the following:

1. **Health Administration Section**—Chairman: Dr. Francis G. Curtis, West Newton, Mass.; Vice-Chairman: Dr. H. F. Vaughan, Detroit, Mich.; Secretary: Dr. W. H. Kellogg, Berkeley, Cal.; Rep. to B. D.: Dr. E. C. Levy, Richmond, Va.; Executive Committee: Dr. G. A. Jordan, St. Louis, Mo.; Dr. M. S. Fraser, Winnipeg, Man.

2. **Industrial Hygiene Section**—Chairman: Dr. A. J. Lanza, Cleveland, O.; Vice-Chairman: Dr. Philip King Brown, San Francisco, Cal.; Secretary: Dr. W. A. Sawyer, Rochester, N. Y.; Rep. to B. D.: Dr. J. W. Schreschewsky, Washington, D. C.

3. **Sociological Section**—Chairman: Dr. W. H. Brown, Washington, D. C.; Vice-Chairman: P. S. Platt, C. P. H., New Haven, Conn.; Secretary: R. Justin Miller, San Francisco, Cal.; Rep. to B. D.: Dr. Ira S. Wile, New York City.

4. Food and Drugs Section—Chairman: John P. Street, Indianapolis, Ind.; Vice-Chairman: R. E. Doolittle, Chicago, Ill.; Secretary: Prof. James O. Jordan, Boston, Mass.; Rep. to B. D.: Prof. James O. Jordan, Boston, Mass.; Cor. Secy.: C. H. Lawall, Philadelphia, Pa.

5. Laboratory Section—Chairman: Dr. R. G. Perkins, Cleveland, O.; Vice-Chairman: Dr. B. L. Arms, Jacksonville, Fla.; Secretary: A. P. Hitchens, Washington, D. C.; Rep. to B. D.: Dr. W. H. Kellogg, Berkeley, Cal.

6. Vital Statistics Section—Chairman: Dr. Henry B. Hemenway, Springfield, Ill.; Vice-Chairman: Dr. R. W. Hall, Jackson, Miss.; Secretary: Wm. F. Petrie, Lansing, Mich.; Rep. to B. D.: Dr. L. I. Dublin, New York City.

7. Sanitary Engineering Section—Chairman: S. A. Greeley, Chicago, Ill.; Vice-Chairman: Theodore Horton, Albany, N. Y.; Secretary: E. D. Rich, Lansing, Mich.; Rep. to B. D.: Robert Spurr Weston, Boston, Mass.



LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

September 8 to October 9, 1920, inclusive.

Names of Sponsors are set in Bold Face Type.

Names of New Members are in Light Face Type.

ALABAMA

C. H. Kibbey, M. D., Fairfield.
James A. Grimes, Divisional Sanitary Inspector, Ensley.

CALIFORNIA

Margaret Beattie, Berkeley.
Adriana Jongscoel, San Rafael.
M. Dorothy Beck, Berkeley.
Alice Potter, Berkeley.
Prof. Edith S. Bryan, Berkeley.
Helen J. Dahl, R. N., Sebastapol.
Agnes Bryant, Public Health Nurse, Berkeley.
Mollie E. Johnson, R. N., San Francisco.
Alma B. Shaffer, R. N., Berkeley.
John M. Force, M. D., Berkeley.
Kathryn Lefiane, Berkeley.
W. H. Kellogg, M. D., Berkeley.
John M. Force, M. D., Berkeley.
F. L. Rogers, M. D., Long Beach.
Albert de Ruiz, Long Beach.
R. L. Taylor, M. D., Long Beach.
Alice Kimball, City Bacteriologist, Long Beach.
L. M. Fowce, M. D., Los Angeles.
J. P. Bushong, V. M. D., City Veterinarian, Los Angeles.
Arthur M. Rogers, M. D., Los Angeles.
Kirby Smith, M. D., Oakland.
E. E. Curtis, Navy Yard, Mare Island.
W. M. Dickie, M. D., Sacramento.
George A. Broughton, M. D., City Health Officer, Oxnard.
Milton J. Ferguson, Sacramento.
Sarah S. Oddie, Librarian A. L. A., San Francisco.
Allen F. Gillman, M. D., Sacramento.
Pearl Chase, Social Service, Santa Barbara.
Ada May Jessen, R. N., P. H. Nurse, Cherry Way.
Alice J. Liles, R. N., P. H. Nurse, Watsonville.
William J. Norris, M. D., Prescott, Ariz.
F. F. Gundrum, M. D., Sacramento.
Gustave Wilson, M. D., Sacramento.
Gup P. Jones, Sacramento.
Olga Bridgman, M. D., San Francisco.
Frederick Wm. Browning, M. D., Health Officer, Hayward.
C. F. Metcalf, M. D., So. Pasadena.
Ida M. Thiele, R. N., Sacramento.
R. W. Wilcox, M. D., Long Beach.
State Board of Health, Sacramento.
George Parrish, M. D., Health Commissioner, Portland, Ore.

Philip K. Brown, M. D., San Francisco.
Mary J. Mentzer, M. D., San Francisco.
Mary L. Cale, San Francisco.
Edna J. Shipper, Children's Hospital, San Francisco.
Wm. C. Hawser, M. D., San Francisco.
W. T. Cummins, M. D., San Francisco.
Celestine J. Sullivan, San Francisco.
W. T. McArthur, M. D., Los Angeles.
Johanna K. Tow, M. D., San Francisco.
Caroline Evers, San Francisco.
A. W. Hedrick, Boston, Mass.
Rebn L. Dobson, R. N., Livermore.
Allen H. Williams, M. D., Santa Barbara.
Bertha Wright, Nurse, Berkeley.

CONNECTICUT

David Greenberg, New Haven.
Florence M. Redfield, R. N., New Haven.
E. Louise Smelle, New Haven.
James D. McGaughey, M. D., U. S. P. H. S., Wallingford.
Irving L. Hamant, M. D.
Helen H. Jenkins, Exec. Comm. N. O. P. H. Nursing, Norfolk.

FLORIDA

Ralph N. Greene, M. D., Jacksonville.
John A. Graham, Bradentown.

IDAHO

E. R. Danley, Twin Falls.
Bert T. Barr, Deputy State Food Inspector, St. Anthony.
C. W. Dill, M. D., Shoshone.

ILLINOIS

H. Bruudsen, M. D., Chicago.
Clara Jacobson, M. D., Chicago.
Sarah M. Hobson, Chicago.
Rhada P. Barstow, M. D., Chicago.
H. C. Merker, M. D., Chicago.
Samuel J. McNeill, M. D., Chicago.
Langdon Pearce, Chicago.
Floyd W. Mohlinan, Ph. D., Chemist, Sanitary District of Chicago.
C. F. Shronts, M. D., Mamece.
O. N. Carr, M. D., Grant Park.
C. St. Clair Drake, M. D., Springfield.
R. Edman Greenfield, Bacteriologist, State Water Survey, Urbana.
J. Howard Beard, M. D., Urbana.
Gertrude E. Moulton, Urbana.
Letha E. Morrison, Urbana.
Acella M. Leach, U. of Ill., Urbana.

A. W. Hedrich, Boston, Mass.
W. O. Manion, M. D., Chicago.

INDIANA

J. N. Hurty, M. D., Indianapolis.
John H. Hewitt, M. D., V.-P., State Board of Health, Terre Haute.
Claude Dallens, M. D., Oölitte.
John A. Rowe, Chairman, Lawrence Co., A. R. C., Bedford.

IOWA

A. W. Hedrich, Boston, Mass.
J. B. Heefner, M. D., State Board of Health, Des Moines.
Iowa State College Library, Ames.
Edwin H. Sands, Housing Commissioner, Des Moines.

KANSAS

S. J. Crumbine, M. D., Topeka.
Kenneth F. Maxey, M. D., Director, State Public Health Laboratory, Topeka.
A. W. Hedrich, Boston, Mass.
F. L. Loveland, M. D., Topeka.

MAINE

C. F. Kendall, M. D., Biddeford.
Henry W. Owen, Saco.
MARYLAND AND DISTRICT OF COLUMBIA
Rosecoo C. Brown, M. D., Washington.
Aldrich R. Burton, M. D., U. S. P. H. S., Washington.

Mrs. Francis K. Carey, Baltimore.
Mrs. George H. Cook, Baltimore.
J. Harris McDowell, Baltimore.
Mrs. Donald Symington, Garrison.
H. C. Cumming, Surgeon General, Washington.
Reynolds Hayden, Commander, M. C., U. S. N., Washington.

Col. J. F. Siler, Washington.
Major James E. Baylis, M. D., Cambridge, Mass.

James A. Tobey, Washington.
Harry Wilkinson, A. R. C., San Francisco, Cal.

MASSACHUSETTS

Mildred Ashley, Boston.
Eva M. Lord, R. N., Forge Village.
A. W. Hedrich, Boston.
Ellnor Reilly, Farmington.
H. R. Anders, Lowell.
Eva B. Southwick, Waban.
W. G. Ward, Brookline.
Albert F. Noble, Somerville.

MICHIGAN

W. C. Hirn, Lansing.
Donald M. Hatch, Wyandotte.

MINNESOTA

A. W. Hedrich, Boston, Mass.
Abraham H. Kaplan, St. Paul.

MONTANA

J. X. Newman, Missoula.
F. D. Pease, M. D., City Health Officer, Missoula.

NEBRASKA

Benjamin Bailey, M. D., Lincoln.
Katharine H. K. Wolfe, M. D., Hygiene Dir., Public Schools, Lincoln.

NEW MEXICO

C. E. Waller, M. D., Santa Fe.
Margaret Tupper, R. N., Dir. P. H. Nurses, State Board of Health, Santa Fe.

NEW YORK

B. R. Rickards, Albany.
Oswald T. Avery, M. D., New York City.
Mrs. Mary C. Carey, R. N., Supt., Hospital for Communicable Diseases, Yonkers.
L. W. F. Carstein, Long Beach.
Robert A. Cooke, M. D., New York City.
Alphonse R. Douchez, M. D., Baltimore, Md.
R. Henderson, New York City.
Ward J. MacNeal, M. D., Dir. Labs., N. Y. Post-Graduate Med. School, Forest Hills.
Onondaga County Tuberculosis Assn., Atten.
Minnie E. Freeman, Exec. Sec'y, Syracuse.
Arthur W. Thomas, Ph. D.
Asst. Prof. of Food Chemistry, Columbia University, New York City.
Francis C. Wood, M. D., Dir. Cancer Research, Columbia University, New York City.
Hans Zinsser, M. D., Prof. Bacteriology, Columbia University, New York City.
J. R. Bolton, M. D., Beacon.
Mrs. Josephine Williams, R. N., Beacon.
John J. Mahoney, M. D., Jamestown.
G. L. Meads, Dir. Alleghany County Hygienic Lab., Belmont.
LeRoy W. Hubbard, M. D., Mt. Vernon.
Harriet Thompson, R. N., Patchogue.
Haven Emerson, M. D., New York City.
Prof. Barbara H. Bartlett, R. N., U. of Washington, Seattle, Wash.

Walter W. R. May, New York City.
Willard C. Smith, U. S. P. H. S., Washington, D. C.

Lawson Purdy, M. D., New York City.

Jno. I. D. Bristol, New York City.

A. V. Salomon, M. D., New York City.

Alta E. Dines, R. N., New York City.

A. W. Hedrich, Boston, Mass.
Charles F. Powlson, Sec. Nat'l Child Welfare Assn., New York City.

NORTH CAROLINA

E. F. Long, M. D., Raleigh.
R. V. Yokeley, M. D., County Health Officer, Lexington.
W. S. Rankin, M. D., Raleigh.
Frederick D. Hopkins, Supervisor of Field Service, N. T. A., New York City.
R. B. Wilson, Raleigh.
W. B. Otey, Industrial Nurse, Gastonia.

OHIO

Wm. H. Peters, M. D., Cincinnati.
Wm. N. Lipscomb, M. D., Georgetown, Ky.
Ernest H. Strong, Cleveland.
Margaret Trevor, Cleveland.
R. E. Miles, Columbus.
Gardner Lattimer, Columbus.
A. W. Hedrich, Boston, Mass.
Jane L. Tuttle, Supt., Visiting Nurses' Assn., Columbus.

OKLAHOMA

Ruth Frances Horel, Oklahoma City.
Mrs. Mary P. Hindman, P. H. N., Berkeley, Cal.
Miss Louise E. McRoberts, San Francisco, Cal.
Dorothy Smith, P. H. N., Pomona, Cal.

PENNSYLVANIA

Perkins Boynton, Chester.
Roy B. Champion, Chester.
D. F. Owen, McKeesport.
David P. McCune, M. D., McKeesport.
Charles A. Hunter, State College.
Alton C. Simpson, Penn. State College, State College.
A. B. Farquhar, York.
Austin M. Grove, M. D., Supt. Public Safety, York.

SOUTH CAROLINA

J. A. Hayne, M. D., Columbia.
Phillip B. Warner, Exec. Sec'y, S. C. Tuberculosis Assn., Columbia.
A. W. Hedrich, Boston, Mass.
Helen B. Fenton, Columbia.

VERMONT

C. W. Many, M. D., Burlington.
Nepollan J. Caron, M. D., South Hero.

VIRGINIA

Wm. P. Caton, M. D., Fairfax.
F. M. Brooks, M. D., Swetnam.
R. A. Martin, M. D., Petersburg.
J. M. Burke, M. D., Chief Surgeon, S. A. L., Petersburg.
C. T. Jones, M. D., City Physician, Petersburg.

WASHINGTON

A. W. Hedrich, Boston, Mass.
Thurston County Anti-Tuberculosis League, Olympia.

WISCONSIN

A. M. Murphy, La Crosse.
W. A. Henke, M. D., La Crosse.
A. W. Hedrich, Boston, Mass.
Central Association, Atten, Kate L. Mehlder, Genl. Supt., Racine.

CANADA

Charles J. Hastings, M. D., Toronto, Ont.
Hamilton C. Cruikshank, M. B., Dir. of Labs., Dept. of Public Health, Toronto, Ont.
A. Grant Fleming, M. B., Deputy Medical Officer of Health, Toronto, Ont.
Henry A. Rowland, PhM. B., Sec'y, Dept. of Public Health, Toronto, Ont.

MEXICO

A. Pruneda, M. D., and J. E. Monjaras, Mexico City.
Gabriel Maids, Pres. Superior Board of Health, Mexico City.

PHILIPPINE ISLANDS

Acting Director of Health, Manila.
Tirso Coronel, M. D., P. I. Health Service, Indang, Cavite.
Director of Health, Manila.
Francisco Xavier, L. M., District Health Officer, Cebu.
A. W. Hedrich, Boston, Mass.
Alfonso Raquel, M. D., District Health Officer, Cagayan, Misamis.
Bonifacio Menelas, M. D., Medical Officer, P. H. S., Intramuros, Manila.

STORIES FROM THE DAY'S WORK

Brief stories of helpful experience are solicited—EDITOR

Sugar Catches More Flies Than Vinegar.
—This works out well in public health work also.

I find that expressed appreciation of efforts put forth by local health officers gives me bigger and more lasting results by far than the use of authority or the show of power. To illustrate: In the town of X recently, I found that the health officer, though willing, was not getting the results he wanted. The local officials of the town were very slow to give him the proper co-operation, the physicians were negligent in reporting their cases of communicable diseases, and the sanitary conditions of that town were far below the average. By the use of authority and the show of power matters could easily have been made worse. Appreciation expressed of the efforts put forth by the health officer, even though they were unsuccessful, put new life where it was needed. With him I called upon the mayor and several other officials of the town and the physicians, and pointed out the value of up-to-date birth and death records to their citizens, showed them the value of accurate records of communicable diseases in their community, and pointed out the flagrant insanitary conditions which could be easily corrected while appealing to their civic pride—all done in a spirit of co-operation and an appreciation of their local handicaps—with a result that new life has been instilled there and the health officer is beginning to get the good results he wanted.

JOHN A. KAPPELMAN, M.D.,
Health Officer,
Canton, Ohio.

Health Controversy with a College.—A few years ago a young lady came from a Southern state to complete her education in a well known university. She had no friends in the North so she took a room in the ladies' dormitory at the university. The young woman had never been vaccinated and the authorities at the university asked no questions about a little thing like that, although smallpox was somewhat prevalent in various places in the surrounding country.

The young lady student came down with smallpox. A very competent and diplomatic health officer who has since served as surgeon in the English army in France, was detailed to handle the case. He met and overcame some opposition in securing the vaccination of the inmates of the dormitory. The victim was placed in the isolation hospital. All went well until the matron of the dormitory heard that the young lady had recovered and would soon be released from the hospital. She informed me that the Department of Health could not return the lady student to her home at the dormitory, and that we should be obliged to find some other place for her, even although she had paid her tuition, had secured a room at the dormitory and this was her only home. While in Chicago attending school she had placed herself under the care of the university and was going to be thrown on to the street by this philanthropic educational institution.

I explained to the matron that it was an unfortunate attitude to assume towards a homeless and friendless girl who had placed herself in their care. I explained further that she was no possible menace to health when discharged from the hospital. The faculty, however, supported the matron, insisted that some other home be provided, and after some discussion complaint was made to the Health Department demanding my discharge. The commissioner, however, declined to do this, suggesting to the university that it might publish the correspondence if it wished. Finally after a long controversy the university authorities did furnish a room for the student, but outside the college grounds.

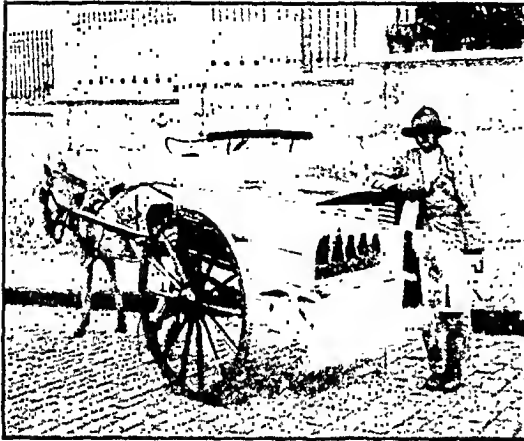
If the university authorities had exercised as much zeal in securing the vaccination of students on entrance as they did afterwards in their mistaken policy, this story would not have been written. It is an illustration of the misunderstanding of conditions of disease dissemination not uncommon even among those in high official position.

HEMAN SPALDING, M. D.,
Chief of Bureau of Medical Inspection, Department of Health, Chicago, Ill.

FROM DISTANT COUNTRIES

IMPROVED HANDLING OF FOODS IN BRAZIL

The JOURNAL is indebted to Dr. Alváro Sanches, Director of Health of Sao Carlos, a suburb of Sao Paulo, Brazil, for a group of photographs showing some of the types of good sanitary work in this populous section of Brazil. The district of which Sao Paulo is the center has a total population

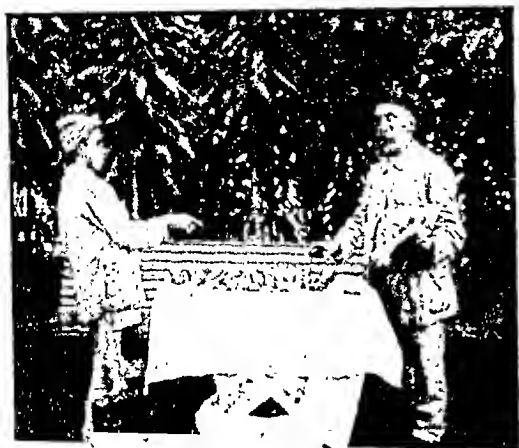


of about 700,000 inhabitants, with two-thirds of them in the principal city itself, and in all of the sections modern health work has been accomplished along most excellent lines. The illustrations might be labeled "Before and after taking," after the style of the old remedies, and certainly indicate remedies that are up to date and valuable.

The boy with his belt of pockets and a narrow-necked bottle in each, closed by an ordinary cork which probably sees service many times, is a type of the old diurnal delivery of milk in this town. It is not so primitive as driving the cow from door to door, but this and a similar method in which the man on horseback had his saddle bags filled with milk bottles, should not find a place in modern milk delivery. Dr. Sanches has effected here a really great improvement. The negro driver of the milk wagon, improved at least to the extent of a coat, and shoes to his feet, now delivers his load of wide-mouthed milk bottles, regularly sealed with the paper disk. Pasteurization is but a step further in the right direction.

Under the shade of tropical trees the street vendor of sweets and pastry has his wares exposed to all the dust incident to this out-of-door location, together with the handling with perhaps unwashed fingers of the various comestibles. In the second picture there are notable improvements. A glass acse protects the cakes and candy from dirt and other contamination, while the vendor of the wares has been instructed in the use of the fork in place of his fingers. It is rather interesting to see that he apparently has already attracted a better class of customers.



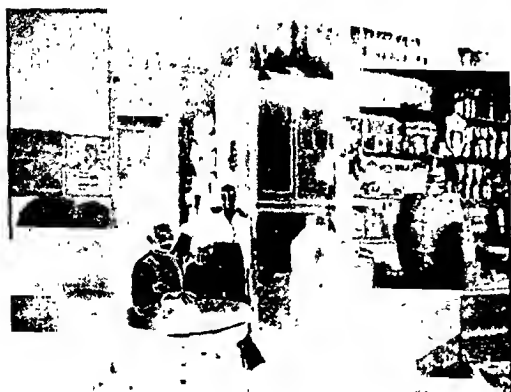


The third pair of pictures is one that has its lesson for grocery and provision stores even in the United States. The helter-skelter arrangement of the first, its disorder, its exposure of foods, its jumbling of strange and incongruous companions, one does not need to travel to South America to see, but the second picture illustrates the work of the health department in reforming this kind of store. Glass cases now takes the place of the open counters; the goods are snugly packed away in regular order. A cleanly person would feel much more at home in such a

store as this than in the one represented in the other picture.

These will serve to illustrate to Northern health officers the excellent work that is being done by their brethren south of the equator.

It should be further said that these improvements are of a type carried out along other lines of sanitation in Brazil, where street improvements, bettered water supplies, and care of sewage go hand in hand with the advances suggested by commerce in the public utilities.



BUILDING REGULATIONS FOR VENEZUELA

Inhabitants of the northern temperate zone are inclined to look askance at sanitary administration lying within the tropics. It is interesting in this connection, therefore, to present some of the tenement house regulations of the Republic of Venezuela. These compare so favorably with those of sections of the United States that it seems well to present them quite in detail. They have been furnished through the courtesy of Dr. L. G. Chacin, Itriago, Director of National Health of Venezuela.

The tenement house is defined as a house or part of a house which is let for apartments or is inhabited by two or more families who live independently, with a common right to the passageways, stairways, courts, baths, etc., and who cook separately in the same house.

The land where a tenement house is built must be firm and dry, and sites that were damp or marshy shall be dried. Land which has been filled in by means of materials subject to decomposition shall be sufficiently disinfected in the judgment of the health officer of the place.

Every building constructed for tenement purposes shall have its principal facade on the street or public way. The rooms intended for sleeping rooms shall be of a size in ratio to the number of persons for whom they are destined, at the rate of 20 cubic metres as a minimum for each person over ten years, and 12 cubic metres for each person under ten years. Under no conditions shall there be admitted a greater number of persons than the house or part of the house can contain according to the present provision. Each house shall have a door with exit to the street or to the court, yard or alley, with an opening of not less than 2.5 metres by 1.2 metres. As a means of ventilation there shall be over each door an opening of equal breadth and at least 30 centimetres in height. This opening may be protected by metal wire or netting which shall not reduce the space for ventilation by more than one-third. Papers and rubbish shall not be permitted to collect in the holes, cracks, or windows of the rooms so as to interfere with the entrance of the light or air.

Article 4 of this sanitary code establishes the following regulations to which tenement houses must conform:

a. There shall be reserved for a court or courts on the lot where the house is built a space of not less in area than 15% of the land built upon. The pavement of the court must be impermeable and inclined sufficiently for drainage. . . . The only cultivation permitted is that of flowers.

b. Where there is a pipe water supply, all the tenement houses must have a provision of water sufficient for the needs of the tenants and for the fulfillment of the provisions of this or other regulations. Where rain water is collected in wells or cisterns, such wells or cisterns must be kept entirely clean and in accordance with all the rules in force or which may be formulated with reference to the extinction of mosquitoes.

c. Where there is a pipe water supply and sewers, every tenement house must have a water-closet for each 15 adults or children over four years. Where they are absent, there shall be built fly-proof and rat-proof latrines arranged according to the provisions in force or passed in the future. In tenement houses of more than one story, there must be a water-closet or latrine for each floor, unless the number of inhabitants of the floor does not reach a specified number. The side occupied by the water-closet or latrine must have one of its sides at least not bounded by any other room; it must have a capacity of at least 25 cu. metres, a height of at least 3 metres, impermeable floors and walls, sufficient light and ventilation, with a window of prescribed size. This room must not communicate directly with the kitchen.

d. All tenement houses must have a shower bath for each 25 persons, on an independent side, with a capacity of not less than 25 cu. metres, a height of not less than 3 metres, impermeable floors and walls, the latter waterproofed to a height of not less than 1.5 metres and in no case communicating directly with the kitchen. In the cases of tenement houses of more than one story there must be a bath on each floor unless the number of inhabitants does not reach the prescribed figure.

e. All newly-constructed tenement houses must have an independent space for the kitchen for each apartment. This space must be of a prescribed size, and each kitchen must be provided with a sanitary refrigerator. Cooking outside of the kitchen is forbidden.

Tenement houses of more than one story must be provided with open stairways constructed of fire-proof materials, protected against the weather, and built in such a way as not to obstruct or impede the ventilation of the rooms. Those of three or more floors shall have in addition for each 100 tenants a fire-proof fire escape of a breadth of at least 1.25 metres.

It is forbidden to build in free spaces of the tenement houses or to deposit materials there excepting those which are being used in repairing the houses.

The courts and places of common use such as porches, passageways, stairways, baths, etc., must be kept completely clean.

With reference to the use of rooms in tenement houses it is forbidden to carry on any industry or occupation dangerous or harmful to neighbors; to establish stables or barns; to raise or care for poultry or any kind of animals except cats and birds in cages. Only clothes of the people of the houses can be washed, in a place with impermeable floors and walls, with a sufficient incline of the floors to permit drainage. Where there is no sewer system and the conditions of the land permit, the drainage shall be by means of drains. These must cease being used and be replaced by sewer connections when a sewer system is established where none exists at the present time.

Cases of contagious or reportable diseases must be reported immediately in writing by the owner or the head of the family to the health officer of the municipality. Strict compliance is enjoined to the orders of the health officer with respect to the sick person, his associates, utensils, clothes, etc.

The room or rooms of a tenement house in which persons have resided who were attacked by contagious diseases cannot be inhabited without having been previously disinfected by the health service, and whitewashed or painted by the proprietor, if necessary in the judgment of the health officers. The disinfection shall be within 48 hours following the death or removal of the sick person.

It is not permitted to build, remodel, or rebuild a tenement house unless the plan has been approved by the board of health, which must arrive at a decision within eight days of notification.

Converting some other building into a tenement house must conform to the rules established for tenement houses of new construction. Alterations of this kind cannot be made without the approval of the health officer. Existing tenement houses must be modified as far as possible to conform to the newer regulations, and the health officer has authority to vacate tenement houses that in his opinion would be injurious to the health of the occupants.

Owners of tenements are required to appoint superintendents or janitors satisfactory to the health officer, who shall be responsible for keeping clean the courts, passageways, cisterns, etc., and in good repair the sanitary equipment of these buildings. The tenants are obliged to deposit in a container furnished by the owner of the building all sweepings, fruit skins, household wastes, etc. These cannot be thrown into the courts, yards, passageways, halls, stairways, or other places in common use. Tenants infringing upon this provision either by carelessness or intention, or who cause harm to the sanitary equipment are

Articles in the sanitary code provide punishment by fines or imprisonment for failure to observe the regulations. Repetition of the offense subjects the offender to double fine.

OHIO PUBLIC HEALTH ASSOCIATION

The Ohio Public Health Association is the new name of the voluntary state-wide health organization in Ohio, which represents the organized efforts of thousands of citizens of the Buckeye commonwealth to promote proper health administration. It was formerly known as the Ohio Society for the Prevention of Tuberculosis and continues to function as the state agency in the national movement for the prevention of the dread white plague.

Objects of the state association are:

1. The promotion of the organization and work of local public health leagues.

2. The dissemination of knowledge concerning the prevention of disease with particular reference to the prevention of tuberculosis.

3. The encouragement and support of organized official work for the prevention of disease.

4. Securing proper legislation for the prevention of disease.

5. Encouragement of adequate provision for the prevention of disease by the establishment of hospitals, dispensaries, nursing service of every description and otherwise to do all things and act having as their object the prevention of disease.

6. The study of conditions regarding the prevalence of preventable disease, especially tuberculosis, in the state of Ohio.

The work of the association is educational. It does not undertake to do actual health work and in no way trespasses upon the functions of the official health organization. Its policy is to initiate and demonstrate methods and means for meeting the various public health problems and then pass them over to the official organization for adoption. Under Ohio's new health code it is optional with each community whether it will employ a full time health officer and public health nurses. It is the purpose of the voluntary agency to demonstrate to each community which does not already have adequate health protection, the benefits to be derived, and, to supplement temporarily, where necessary, the work of either the state or local official health machinery. It is recognized that taxation is the fairest way of paying for health protection, but in many localities

taxpayers are slow to accept the fact that health is purchasable and that their community is in need of that degree of health protection which all authorities agree can come only through the employment of trained health officers and public health nurses.

State legislatures and county officials who have the appropriation of funds and levying of taxes for health administration are guided by the sentiment of the public in their respective districts. That sentiment must be crystallized and guided by proper organization and education. State and local officials who have the administration of funds for public health are not always in position to secure legislation needed. It is here that the voluntary health agency can step in and help to carry out the program desired.

The past year or two has witnessed the development in Ohio and other agricultural states of strong organizations of farmers and live stock men, prepared to go before the state legislatures and Congress in the interest of crops, swine, cattle and horses. The secret of the success of the Anti-Saloon League of America in its long war against the liquor traffic was in voluntary organization of the "folks back home."

Ohio is building a militant state-wide health organization which will be ready at all times to uphold the hands of state and local health officials and go before the public in the cause of a healthier and happier state.

The State Department of Health welcomes the activities of the voluntary organizations—in fact, is depending upon this coöperation in extending the benefits of the new state health law recently adopted.

The Ohio Public Health Journal, commenting on the phase of the voluntary health organization, says:

"Voluntary health organizations which have rendered such valuable service to many Ohio communities in past years should not consider their work ended with the entrance of the new district health boards into the field. There is still a wide field for the voluntary organization—especially this year, when the new official organization is in its infancy.

"Associations which have been maintain-

ing public health nurses would do well to continue that policy for the present, at least. In this beginning year, with many of the district boards handicapped by shortage of funds, assistance of this kind will fill a great need.

"Each association maintaining a nurse should place her under the full supervision of the official health authority, unless the district board has failed to install an efficient health organization. This union will promote the efficiency of both the official and the unofficial nursing staffs by preventing duplications of effort. The Red Cross has recognized the need of such coöperation by agreeing to place all its public health nurses under the direction of officially constituted health authorities.

"In the work of educating the public both by precept and by demonstration, to a greater appreciation of the benefits to be derived from adequate health protective machinery, the volunteer health organization must continue to play an important part. By encouraging, aiding and supplementing their local health departments and by keeping the cause of health constantly in the public eye, they can help to dispel the lack of interest and lack of information which still exists in many localities. Now that an immediate means of providing adequate health protection is at hand, these educational duties assume an importance greater than ever before.

"Voluntary organizations have done much to raise health standards in Ohio. The still wider field that is opening offers them an opportunity to increase their service to the public."

The Ohio State Medical Association, at its last convention, endorsed the purposes of the association and became affiliated with the Ohio Public Health Association, electing two members of the board trustees to represent the medical profession. The Ohio Hospital Association is likewise represented on the board of the Ohio Public Health Association.

A brief history of the voluntary health organization in Ohio is here given.

In 1901, nearly 20 years ago, those in charge of the State Board of Health recognized the absolute necessity of some form of voluntary organization through which the general public might be aroused to the menace of tuberculosis. Men and women

in the state, of recognized influence and willing to take up the crusade against tuberculosis were called in by the State Board of Health and there was formed the Ohio Society for the Prevention of Tuberculosis.

First efforts were directed toward the securing of legislation which would permit the erection of state and county sanatoria for the care of those afflicted with tuberculosis. Through the efforts of this organization these laws were secured and a state sanatorium for the treatment of incipient cases was established in 1914.

Local societies affiliated with the state organization at the same time were busy at home promoting the establishment of county and district hospitals for the treatment and care of tuberculosis, establishment of dispensaries and open-air schools. A number of the county and district hospitals are now prepared to care for advanced cases as well as incipient cases.

The Ohio Society for the Prevention of Tuberculosis also blazed the trail in this state for the establishment of public health nursing service. Today there is hardly a community in the state that does not have a public health nurse, employed either directly under the local official health organization or by some welfare organization.

Since 1911 the voluntary state-wide health activities as well as the work of local societies has been financed wholly from the proceeds of the Red Cross Christmas seals, sold annually under the direction of the National Tuberculosis Association.

Beginning in 1920 the Ohio Public Health Association will carry on the usual campaign for the sale of these seals, but entirely separate from the Red Cross. It is planned to sell in the state more than \$200,000 worth of seals. In most instances 80% of this money will remain in the community where it was raised for local public health work.

Local societies are planning their work for the coming year and will go before the public at Christmas time seeking support through the sale of the little seals.

While the fight against tuberculosis is to be continued by the state and local voluntary organizations, the new program of the voluntary agencies in Ohio will be much broader. It is recognized that tuberculosis is a general health problem and, taking a

lesson from the strategy of Marshal Foch, which gained him the supreme victory, we shall rearrange our plan of attack and strike all along the line, using all our forces.

Local anti-tuberculosis societies in a number of counties are uniting with other organizations, including child welfare bodies and similar organizations, and forming local public health leagues, affiliated with the state health association.

Demonstrating to the schools of the state the value of teaching school hygiene and health instruction to the school youth is an important branch of the work of the Ohio

Public Health Association for the ensuing year. The Modern Health Crusade system, founded by the National Tuberculosis Association, is being introduced in the rural schools of a half dozen counties in the state under the supervision of the Ohio Public Health Association, which employs a state crusade director. The State Department of Public Instruction is coöperating in the movement and, while more or less of an experiment this year, it is expected that this work will ultimately be adopted as a part of the school curriculum.

H. E. ROULFS.



PUBLIC HEALTH NOTES

Abstracts by D. GREENBERG, M. P. HORWOOD, JAMES A. TOBEY and HOMER N. CALVER.

Shall General Hospitals Care for the Tuberculous?—In 1916 the National Tuberculosis Association recommended that general hospitals should admit tuberculosis patients and should provide separate wards for them. Recently this recommendation has received the endorsement of Surgeon General Cumming of the U. S. Public Health Service. The following reasons are given: The provision of such beds would "insure earlier diagnosis, would make possible the training of interns, would popularize treatment in the home climate, would provide convenient facilities for the observation and prompt treatment of patients and would eventually increase the ability of the family physician in making an early diagnosis." It is believed that the next great step in the anti-tuberculosis movement must be to provide adequate hospital facilities with every tuberculosis clinic. This does not mean that a new hospital must be erected with every existing clinic, but that a working relationship will be established between the clinics and existing hospitals.—*Modern Hospital*, July, 1920. (M. P. H.)



Value of Municipal Dairy Inspection.—Improvement in a milk supply cannot be made by establishing model milk ordinances

and conducting laboratory examinations on the milk supply. The important factor is thorough and intelligent farm inspection, at which time the defects in methods or equipment may be demonstrated to the farmer, and means for introducing the necessary improvements clearly shown. It is also important to maintain constant supervision over milk stations and pasteurizing plants through frequent inspections. Bacterial counts may be very important, but they can only supplement farm inspections as a means of improving the milk supply.—C. V. Craster, M. D., *American City*, August, 1920. (M. P. H.)



Overcoming Growths of Fungi in Tidal Waters.—It is stated that the best method of overcoming growths of fungi resulting from the discharge of sewage farm effluent, drainage water, etc., is to store the discharges in a sufficiently large lagoon to accomplish biological self-purification, which is accomplished ultimately by fish life. Waters so treated will not support growths of fungi. Nothing is stated regarding the possibility of such lagoons becoming nuisances through the accumulation of sludge.—Kolkiwitz & Zahn, *Zeit. f. Wasser, u. Abwasser* 7, 40. (R. S. W.)

Rôle of the Hospital in the Public Health Campaign.—Hospitals are very different to-day from what they were only a generation ago. The modern hospital may be defined as an institution whose objects are the care and treatment of the physically and mentally ill and injured, the education of patients in hygiene, both personal and public, the clinical training of doctors, nurses and hospital social workers, the advancement of medical science, and the prevention of disease. In the modern public health campaign hospitals are necessary for the care and treatment of contagious diseases, of tuberculosis and venereal diseases; for the education of public health nurses, and also for the education of the patients in the principles of personal hygiene. From 1904, the year when the National Tuberculosis Association was organized, to 1919, the number of tuberculosis hospitals, sanatoria and day camps increased from 111 to 600. Although the number of contagious disease hospitals has increased, there is still a woful shortage. That the hospital can play an important part in the venereal disease campaign is evidenced by the work of Horner of the Boston City Hospital. Of 500 patients examined, 16% had syphilis, although only 2% had been identified by other means than the Wassermann. It is estimated that at least 10% of the population suffer from syphilis, and that 20% to 50% of all males below 40 suffer from gonorrhea. It is evident, therefore, that the hospital can be of invaluable assistance in detecting and treating cases of venereal disease. That the hospitals are beginning to realize their responsibility and duty towards this important phase of the public health campaign is made evident by the report of the U. S. Public Health Service, that 499 venereal disease clinics were in operation at the end of 1919. The great value of the hospital in teaching patients the principles of hygiene is also evident, for the patients are then in an unusually receptive mood. Information concerning food and diet, ventilation, clothing, the need of a proper mental attitude and other phases of personal hygiene can be disseminated with great profit.—Joseph J. Weber, *Modern Hospital*, July, 1920. (M. P. H.)

Tuberculosis in Cleveland—A Survey of Immediate Needs.—As part of the health and hospital survey of Cleveland being conducted under the direction of Dr. Haven Emerson, a study of the tuberculosis situation and its needs has been made by Dr. D. B. Armstrong. The study has been quite thorough and it is found that Cleveland has already done much to control tuberculosis. For instance, there is a Bureau of Tuberculosis in the Cleveland Health Department. There are also seven tuberculosis clinics maintained by the same department. The Health Department has a staff of 80 or more general public health nurses, who devote considerable time in finding and treating cases of tuberculosis. About 500 beds are provided in municipal and private institutions for the care of early and advanced cases of tuberculosis among all ages. There is also a very active anti-tuberculosis league that conducts a splendid educational campaign. There is also an excellent organization to control the milk supply and general sanitary conditions, the infant welfare and school health work and the dispensing of relief. Cleveland has been a pioneer in the development of the health center idea. The attendance at the tuberculosis clinics between 1914 and 1918 has been over 61,000. For every death from tuberculosis in 1918, 4.7 active cases of the disease were registered, a ratio which is higher than that in other communities. The death rate from tuberculosis has diminished from 225 per 100,000 population from 1865 to 1869, to 145 per 100,000 population from 1913 to 1917.

In spite of all this excellent work, between 1,000 and 1,200 people die of tuberculosis in Cleveland every year, and there are almost 6,000 known cases of the disease. Dr. Armstrong makes the following recommendations for a more energetic campaign against tuberculosis. It is important that more cases of early tuberculosis should be discovered. Cases of tuberculosis should be reported as soon as the diagnosis is made. Expert medical advisory consultation service on diagnosis and treatment should be established in connection with the health centers. Post-graduate medical training in tuberculosis should be provided in the medical schools. About 450 additional beds for the care of tuberculosis

cases should be provided. Patients should be encouraged to remain at the sanatorium until they are either cured or the disease is arrested. About 150 additional public health nurses should be provided to find suspicious cases. There should be a more intensive educational campaign on the dangers of infection, personal hygiene, food hygiene and measures to increase resistance. The anti-spitting ordinance should be enforced and dangerous consumptives should be segregated. There should also be immediate relief to the serious housing problem. A full-time chief in the Bureau of Tuberculosis should be appointed. The work of the Tuberculosis League should be adequately financed, and finally a campaign of industrial hygiene, sanitation and welfare work should be inaugurated as an important measure in the fight against tuberculosis. —*Modern Medicine*, July, 1920. (M. P. H.)

†

Work of the Rockefeller Foundation In 1919.—The following list indicates the extent and splendid quality of the public health work conducted by the Rockefeller Foundation in 39 different governmental areas. Yellow fever control was successfully extended in Ecuador, Nicaragua, Honduras and Salvador. Much progress has been made through coöperative campaigns in the cure and prevention of hookworm in 13 Southern states of the American Union, in seven of the states in Brazil, in five islands of the West Indies, in five countries of Central America, in Ceylon, the Seychelles Islands, China and Queensland. Demonstrations in the control of malaria were continued in Arkansas and Mississippi, and arrangements were made for extending the program to eight other Southern states. The anti-tuberculosis work in France was widened to include 21 departments. A modern medical school was established in Peking. Pre-medical schools were aided in Changsha, Shanghai and Nanking. Medical courses were supported in Tsinanfu. Seventeen hospitals in various parts of China were aided. Help was given towards the support of the Institute of Hygiene in Sao Paulo University in Brazil. The School of Hygiene and Public Health at Johns Hopkins University was entirely supported. Fellowships in Ameri-

can universities were granted to 72 students of medicine and public health from China, Brazil, Salvador, Czechoslovakia and the United States.

The work of Dr. Hideyo Noguchi in discovering the apparent cause of yellow fever and the eradication of yellow fever from Guayaquil deserve special mention. Dr. Noguchi showed that the blood from patients in the early stages of yellow fever was infectious for guinea pigs; that the disease could be transferred from one group of guinea pigs to another; that dogs and monkeys could also be infected both by inoculation and by the bite of infected *Stegomyia* mosquitoes. Finally the cause of the disease was isolated from the blood and was found to be a minute, delicate, thread-like spiral organism which was called *Leptospira icteroides*. Noguchi was also able to develop a serum against yellow fever which gives great promise for the future. By means of a well-organized and thorough campaign against the mosquito, consisting of drainage, filling, oiling, screening and the use of minnows to devour *Stegomyia* larvae, Guayaquil has been freed of yellow fever for the first time since 1842. Not a single new case has developed in Guayaquil since May, 1919. The report abounds in many splendid examples of public health work in many fields and in many countries.—(M. P. H.)

†

Sewage Utilization at Munich.—According to published plans, subsiding basins for sewage have been provided for Munich sewage, and the settled sewage is disposed of on the sandy district to the north of the city. Gradually the barren tract is accumulating soil, and it will eventually become valuable arable land. For the reclamation of the tract, the basin sludge mixed with loam is used. Already seventy carloads (German) of this kind of fertilizer are available daily. The disposal method can be practiced for a hundred years hence and the Isar be kept clean meanwhile. The editor recommends the method for the consideration of other cities, and remarks upon the happy conditions at Munich.—*Zeit. f. Wasser. u. Abwasser*, 7, 50. (R. S. W.)

Council of Child Health Activities.—As a step toward preventing duplication of effort and increasing the effectiveness of health work among children there has just been created the Council of Coördinating Child Health Activities. The founder members are the American Child Hygiene Association, the American Red Cross, the Child Health Association of America, the National Child Labor Committee, and the National Organization for Public Health Nursing. The formal announcement says:

"Organizations for doing health work among children are more and more appreciating the pressing need of correlating their activities. It is felt that not only is there much duplication and, therefore, much waste of effort, but also that many opportunities for developing well-rounded programs for the health of children are thus lost."

The federated organizations have held a number of conferences and have formed the Council, the principal objects of which are:

"1. To define and develop so clearly their own work that each organization will be working in harmony and coöperation with all the others.

"2. To develop new methods which will lead to meeting more effectively some of the special problems still unsolved.

"3. To afford an opportunity for any organization dealing with the health of children to submit its plan and program for suggestions.

"The council will act as an advisory and coördinating agency."—(J. A. T.)

†

Prevention of Goiter.—The results of a study carried on for a period of 30 months show that simple goiter can be prevented very simply and cheaply. Of 2,190 school children taking 2 grams of sodium iodid twice yearly, only 5 have shown enlargement of the thyroid gland, while of 2,305 children not taking this prophylactic, 495 have shown enlargement of the thyroid. Furthermore, of 1,182 pupils with thyroid gland enlargement at the first examination and who took the prophylactic, 773 thyroids have decreased in size, while of 1,048 pupils with thyroid enlargement who did not take the prophylactic, 145 thyroids have decreased in size.

In the practical application of the preventive treatment, one must keep in mind

the three periods when simple thyroid enlargement most commonly occurs: (1) fetal, (2) adolescence, (3) pregnancy. The prevention of goiter in mother and fetus would seem to be a responsibility of the medical profession, supplemented with public education. The prevention of goiter in adolescence should be a public health measure and could be handled in the public schools. Education of the pupils could be combined with the actual administration so that after leaving school they could continue the treatment if necessary. Physicians in industrial medicine could render an important service in this field. The manner and form of administration of the iodine is described in detail.—D. Marine and O. P. Kimball, *Arch. Int. Med.*, June 15, 1920, 661. (D. G.)

†

Organizing for Public Health Emergencies.—The gist of this article is that no community is immune to disaster and that preparations should be considered for such emergencies which might or would present public health problems, as epidemics, floods, fires, explosions, tornadoes, earthquakes and wrecks. The necessity for central authority in time of disaster is cited and an executive having the qualifications of energy, tact, ability and common sense is needed. A survey of local resources should be made and checked up at intervals. Time often means a question of life and death. Experience may be a good teacher, but it would not be gained at the expense of some person or group of persons. Health officials should look ahead and be prepared for any possible contingency.—J. A. Tobey, *Health News*, N. Y. State Department of Health, June, 1920.

†

Influenza and Pulmonary Tuberculosis.—Further evidence of the part played by epidemic influenza as an exciting cause of clinical tuberculosis is presented by the author in a summary of the replies to a questionnaire sent to the largest sanatoriums in the country. Of 7,871 patients admitted to these institutions from October 1, 1918, to October 1, 1919, 1,170, or 15 percent, were perfectly free, according to their history, from any known clinical tuberculosis prior to the epidemic.—M. F. Sloan, *Amer. Rev. of Tuberculosis*, June, 1920, 262. (D. G.)

GRADUATING EXERCISES OF MOTHERCRAFT SUMMER CLASSES

Wherever mothercraft is given a carefully prepared course is followed, and at the close of this essays are written, some of which are read at the graduating exercises. In this picture that is reproduced herewith a little girl may be seen reading her essay, "The Care of Baby." About 350 girls received their diplomas at these exercises in Newton, Mass., at the playgrounds under the supervision of Ernst Hermann.

Similar instruction has been given at several other centers. Typical of the essays that are prepared for these graduations is the following written by Lillian E. Licopola:

The Care of the Baby

What is to be more desired than a healthy, happy baby? What more as we hear it gurgle happily as it clutches some little toy in its chubby fingers. Surely we will help in the noble task of keeping more babies well and happy, for there are really too few babies who have the proper care.

A little baby is like the tender shoot of a plant. To make it blossom well we will have to nourish it well, guard it against its enemy, disease, and let it thrive in a good atmosphere. A good system of home

sanitation is very necessary if we want the forces of nature to do their best for us.

The eyes of a baby must be protected because carelessness has blinded many. Bathing should happen often and his dresses must be simple, neat and comfortable. They should not in any way hamper his movements, as a baby should have exercise. Crying is good for the baby because it expands his lungs, but it is not to be indulged in to excess.

A mother should nurse her baby for several important reasons. Breast milk is nature's food for the baby and is fresh, sterile and is always ready at hand. It is the least expensive food that can be given. If a bottle must be used for the baby the best substitute for breast milk is properly modified cow's milk. A physician should direct how it is to be prepared. Such milk should be cared for well and should be delivered in sealed jars, never in open cans.

There are countless other rules for the care of babies and though seemingly trifling and unimportant, they mean very much. If they are followed to the best of our ability we will get our heart's desire—a well and happy baby.



© MBD

Significance of Exposure to Tuberculosis in Infancy.—The author has compared the family histories of 100 patients suffering from pulmonary tuberculosis with the family histories of 100 healthy persons, his object being to find out how many in each class had been exposed to infection from tuberculosis in infancy. Both the tuberculous and the healthy were under the age of 40, but while about 50 of the healthy persons belonged to the same social strata as the tuberculous, the remaining 50 belonged to the professional classes, and consisted of students and nurses. In 51 percent of the patients suffering from pulmonary tuberculosis it was found that there had been exposure to infection within the first fifteen years of life. Only 13 percent of the healthy persons had been thus exposed within the same period. Within the first five years of life 15 percent of the tuberculous had been exposed to infection, whereas only 1 percent of the healthy persons had been thus exposed within the same period. The term "exposure to infection" was confined to cases in which the person concerned had lived in close touch with a coughing consumptive. In the tuberculous class there were 27 cases in which one or other parent had been consumptive, in six cases a brother or sister, in 11 cases some other relation, and in seven cases the child had been in close touch with a consumptive who was no relation. In the healthy class there were three cases in which the parents had been tuberculous, four cases in which a brother, sister or other relative had been tuberculous, and six cases in which the tuberculous "contact" had been no relation. The author concludes that these figures show some relation between exposure to infection in infancy and pulmonary tuberculosis in adult life. But he admits his investigations do not directly show what the nature of this relationship is.—A. Wallgren, *Upsala Läkare-föreningens Förhandlingar*, 1915, 20, 359, *Tubercle*, April 1920, 327.—(D. G.)

‡

Attacking Malnutrition.—The method of attacking malnutrition as carried on by the Association for Improving the Condition of the Poor in New York City, begins with a careful examination of the child by a physician skilled in dealing with children. After any physical defects disclosed by the examination are

attended to, the next problem consists in a readjustment of the child's food habits. The latter work is conducted by a group of trained dietitians.

Two groups of children are cared for, children of preschool age and school children. With the latter group nutrition classes are conducted; with the former, intensive work is carried on in the home. In this home work the dietitian carries a small weight chart, and records the losses or gains of the child on each visit. The weighing is done in the home by means of a scale, which combines the qualities of weighing accurately and yet is sufficiently light to be carried readily by the visiting dietitian. In addition to the weighing a record is made of the actual food habits of the child, and these are checked up on each visit.

Revisits to the home are made once a week. This intensive work is continued for a period of sixteen weeks and longer if conditions warrant and if the physician decides that it will be helpful. After the intensive work is discontinued, the home is revisited once a month, the child reweighed and again checked up on its food habits. In this way the child is kept under observation for a period of at least twelve months from the time that it first became a case receiving active attention.

Preliminary results of the work are available. In one group of 62 children 24% gained less than the average expected gain of children of this height and age; and 62% gained more than the average expected gain. The median of actual gain for the entire group was 175% (the average expected gain of normal children of that height and age being 100%). In a second group of 54 children, 13% gained less than the normal expected gain and 87% gained more than the average expected gain. The median for this group was 220%. In a third group of 61 children, 31% gained less than the normal weight, whereas 67% gained more than the normal expected gain.

As a result of the work carried on thus far the author feels that a nutrition class or clinic while very useful in the attack on malnutrition, is only an incidental feature and that the campaign if it is really to be preventive in character must be made on a group of children who are too young for the class method of treatment, and that the chief emphasis must be placed on the home.—B. B. Burritt, *Survey*, June 19, 1920, 405 (D. G.)

The School Lunch.—Many school children are required for one reason or another to take their luncheons in school. It is therefore important that the school lunch problem should be handled with as much intelligence as other problems affecting the health and welfare of children. A hot lunch is always preferable to the cold variety, but where the hot lunch is not available the cold should be made as attractive as possible. The container should preferably be of the collapsible kind and made of tin. This is well ventilated and can be readily cleaned. Sometimes tin cracker boxes, paper boxes, or baskets are used. The food should be wrapped in wax paper to prevent drying. Everything should be done to enhance the appearance of the materials in the lunch box so as to make the food attractive. The lunch box should contain, besides the food, paper napkins, paper cups and other paper containers necessary for cooked foods, and a small knife, fork and spoon. Wherever possible a thermos bottle should be used to carry the liquid. The lunch should be well regulated from the dietary standpoint and should be varied from day to day. Most menus must necessarily be restricted to sandwiches, fruit and a dessert. The filling for the sandwiches can, however, be varied considerably. Even the bread itself can be varied from the ordinary white bread to raisin bread, nut bread, brown bread, rolls, biscuits, muffins, and corn bread. The article also suggests numerous foods as possibilities for school luncheons. A. W. Sandwall, *The Commonwealth*, January-February, 1920.—(M. P. H.)

Medical Officer vs. the Alphabet.—Although Englishmen are proverbially slow in catching glints of humor, Lord Sands of Edinburgh seems a notable exception. A recent little address in a case of an architect against the War Office shows that the learned judge is quite aware of the absurdities of official red tape and the official custom of designating by letters, which are enigmas to the layman, the different officials and officers. The following from the *Medical Officer* is credited to Lord Sands, and will be appreciated by all who have occasion to wait till the intricacies of regular procedure are straightened out before proceeding to some necessary task. "Even in the throes of a

great war," said the judge, "when a medical officer, holding a local command, required the advice of an architect in connection with some suggestion which he desired to submit for sanction, were it only the introduction of a stove, the proper course was that the medical officer in question should communicate his request to the D. D. M. S., who, if he approved, would transmit it to the Q. M. C., who would lay it before the B. G. A., who might instruct the S. O. R. E., who would communicate with the C. R. E., who would detail an engineer officer, if available, to advise the C. M. O. Apparently, if such officer were not available, either the matter must wait or else it must find its way back around the alphabet in order that the D. D. M. S. might be able to transmit to the C. M. O. the B. G. A.'s authority to consult an architect as to whether a stovepipe should be carried through the wall or up the chimney. But we won the war."

✱

Do Calories Measure the Value of Food?—This question is asked by Dr. Henry Dwight Chapin, who arrives at the conclusion that heat measurement alone is not a safe guide for the calculation of food values. Foods that build rather than those that readily undergo oxidation must be properly gauged if we are to have healthy development. Some form of biologic testing of foods must be elaborated if an always reliable gauge of nutrition is to be established.—*Sc. Am.*, March 28, 1920. (H. N. C.)

✱

The Cost of Sickness.—According to a computation made after careful investigation by the United States government, the working people of the United States lose every year 270,000,000 working days through sickness. This is equivalent to more than 900,000 years, and in a century to 90,000,000 years.

Consider for a moment the enormous economic waste involved in this loss of time. Basing our estimate upon the present prices of labor, the amount of time lost through sickness reaches an aggregate of more than \$1,000,000,000 annually; and nearly all this sickness is due to ignorance and is easily preventable.—*Good Health*.

Health Work of North Carolina Landowners' Association.—Land owners are notable for the skill with which they set forth commercial advantages of their communities, but it has remained for the North Carolina Landowners' Association to add to such activities an educational campaign in hygiene and sanitation. This is to be conducted in eastern North Carolina and will be in the form of free illustrated lectures by Dr. Charles E. Low, formerly Superintendent of Health for Wilmington and New Hanover counties. This is done in coöperation with the State Board of Health.

The need of work is evident from the high typhoid rate in North Carolina. In 1918 there were 568 deaths from that disease in the state. In 1919, through education and law enforcement by the State Board of Health and local health organizations, the number was reduced to 427—approximately 25%. With this encouragement the Landowners' Association is adding its influence to those already at work. The principle upon which this business association undertakes the expenditure of its own funds is that the deaths and sickness due to typhoid in 1918 and 1919 represent an economic loss of \$5,000,000 from a preventable disease.

There are only two states in the registration area which have a higher malaria death rate than North Carolina. The immense amount of chronic malaria and consequent physical incapacity is one of the greatest factors in retarding the material development of eastern North Carolina. Hookworm is another debilitating disease common in these warm latitudes.

The free illustrated health lectures will include discussions of the diseases mentioned, and the relation of insects to their transmission, together with the consideration of soil and water pollution, and the necessity of privy sanitation. Undernourishment, faulty diet and the need of a larger and well-cared for milk supply will also be considered.

The State Board of Health acting independently will follow this campaign by one of vaccination against typhoid wherever the coöperation of county commissioners can be obtained.

Problem of the Birth Rate.—The second report of the National Birthrate Commission of England has just appeared. In speaking of the low birth rate of the middle classes it is pointed out that: "The classes which have demonstrated superior capacity for the struggle of life in the past by rising in the social scale have, during the recent past, ceased to contribute anything like their fair share to the nation's capital of men and women." The chief cause of declining birth rates is declared to be voluntary restriction: "Race-suicide has begun. While the practice of restricting the family began with the educated and professional classes, it is gradually spreading through the whole community for reasons which are not far to seek. Child-bearing, nursing, and rearing of children are tedious and full of anxieties, especially if sufficient domestic assistance is not forthcoming. For the middle and upper classes the costs of education are very large and threaten to increase."

The moral question, whether it is permissible in any conditions to restrict the family, is discussed and a somewhat hesitating conclusion in the affirmative reached. But it is pointed out that the refusal to accept the burden of parenthood on unworthy grounds is not only often an evidence of selfishness, but, if it becomes general, will also have as its consequence a slackening of the moral fibre of the nation. To stimulate the birth-rate various suggestions are examined. One is the endowment of motherhood, but it is pointed out in the report that to do this the present yield of income tax would have to be doubled. Another proposal is to take greater care of the unmarried mother and eliminate the enormous mortality of illegitimate children. The compulsory notification of venereal diseases is considered. The report also favors a certificate of health as a legal obligation for persons contemplating marriage, and to prevent irregular unions it declares that State assistance to start young couples on the land in this country, or after emigration, together with State help during pregnancy and the puerperium, would be of great assistance in carefully selected cases.—*Medical Officer*, June 5, 1920, 220, (D. G.):

Encephalitis Lethargica.—So much has recently been published in the newspapers about the appearance of sleeping sickness in various parts of Europe, and even of the United States, that the League of Red Cross Societies has deemed it advisable to call attention, through its *Bulletin*, to a few of the striking features of the disease, and to some of the popular misconceptions concerning it.

The name "sleeping sickness" should be applied only to the African sleeping sickness, and because of the difference in origin of the European disease it should be called encephalitis lethargica, the name given to it by Von Economo when he first described it in Vienna in 1917, before which time, although it is probable that the disease had been present in sporadic form, it was not recognized. There have been several outbreaks observed in various European countries and in America.

The disease has been regarded at times as due to food poisoning; as representing an unusual form of poliomyelitis; as related to influenza because it is frequently present in localities wherein influenza is epidemic; or as consequent upon the war because of abnormal physical and mental conditions. Studies seem to show that the disease represents an inflammation of certain portions of the brain and nervous apparatus, and a filterable virus has been obtained from the mucous membrane of the nose and throat of patients dying of the disease, which reproduces in monkeys and rabbits symptoms and lesions similar to those found in human beings. The general belief at the present time is that encephalitis lethargica is an independent disease of infectious origin.

"At the present state of our knowledge," says the *Bulletin*, "it would seem that encephalitis lethargica is met with over a widespread area, but that it is only mildly epidemic, and that it is slightly if at all contagious in the usual acceptance of this word; that individual susceptibility seems to play a distinct role in its incidence and possibly many persons harbor the causative virus or micro-organism, probably in the nose and throat, without showing any symptoms whatsoever; that no causal relationship between it and epidemic influenza has yet been demonstrated; and that its main symptoms are fever, paralysis of certain muscles of the eye, and sleepiness."

Although encephalitis lethargica has been occupying such a prominent position in the press, there is no recognized, specific treatment offering any real hope of cure. This is only to be expected, however, in the case of a disease of which the exact nature and its method of propagation and dissemination is unknown, except that the infection is first localized in the nose and throat. Recent work, however, gives the hope of increased knowledge and a possible and rational cure in the comparatively near future.—*Bulletin*, League of Red Cross Societies.

✦

Sanitary Survey of Rockford, Ill.—In a special bulletin, the Illinois Department of Health publishes the results of a sanitary survey of Rockport, Ill., as conducted by Paul L. Skoog. The estimated population of the city for July 1, 1917, was 56,609. Of the inhabitants about 40 percent were of Scandinavian origin. Twenty-one percent of the entire population was foreign born. The foreign population was made up of Scandinavians, Italians, Poles and Lithuanians. An analysis of the vital statistics showed that births and communicable diseases were not entirely reported. It is estimated that 90 percent of the births are reported. While all the deaths are reported, the death certificates are frequently either inaccurately made out or have certain facts omitted. During 1917 the infant mortality rate was 110 per 1,000 births. The crude death rate during the five years from 1913 to 1917 has varied from a minimum of 10.5 in 1914 to a maximum of 12.9 in 1917.

One of the most commendable forms of health protection in the community is the medical inspection of school children. The Board of Education controls this work and employs a school physician, four nurses and a dentist. The latter is employed on a half-time basis. Approximately 9,000 grade school children get the benefit of the medical service.

Among the recommendations made, the following are important: That the city employ a full-time, well-trained health officer; that the personnel of the health department include an epidemiologist and public health nurses; that a modern contagious disease hospital conveniently located be erected; that the work of the public health

laboratory be increased; that an active and extensive campaign for infant welfare be inaugurated; that the health department wage a more vigorous campaign of health education and publicity; that the appropriation for health work be increased to equal that of the police department; that the health department undertake to control several diseases; that other communicable diseases be more adequately controlled; that the use of open privies which is prohibited by law be abandoned; that fly breeding places be supervised; that all dairies should be required to sterilize effectively all milk bottles and other milk utensils; that all connections between the public supply mains and the factory fire protection systems be abandoned; and that the sewerage system be greatly extended.—(M. P. H.)

+

Experimental Pellagra.—The authors describe an experiment carried out in a penitentiary to test the possibility of producing pellagra in previously healthy men by feeding a monotonous diet, principally of cereals. The subjects of the experiment were eleven white adult male convicts who volunteered for the purpose. All persons other than the volunteers resident on the farm were under observation as controls—a total of 108. The general sanitary environment was the same for subjects and controls. No direct communication with the outside was permitted the volunteers. There was no special restriction imposed on the controls.

The average food intake by the convict controls varied between 3,500 and 4,500 calories, between 90 and 110 grams of protein, 95 and 135 grams of fat, and between 540 and 580 grams of carbohydrate. Approximately from 20 to 35 percent of the protein was from animal food. The ingredients of the experimental diet were highly milled wheat flour, maize meal and grits, cornstarch, white rice, cane sugar, cane syrup, sweet potatoes, pork fat, cabbage, collards, turnips, turnip greens, coffee, Royal baking powder, salt and pepper. In its essential make-up the experimental diet was probably not entirely typical of the average pellagra producing diet. The average intake by the volunteers varied between 2,500 and 3,500 calories, between 41 and 54 grams of protein, between 91 and 134 grams

of fat, and between 387 and 513 grams of carbohydrate.

After six months of observation none of the controls developed any evidence of pellagra. On the other hand six of the eleven volunteers developed typical evidence of pellagra.—J. Goldberger and G. A. Wheeler, *Arch. Int. Med.*, May, 1920, 451. (D. G.)

+

National Institute of Hygiene.—At the last session of the council of the University of Paris approval was given to an arrangement between M. J. L. Breton, Minister of Hygiene, and Professor Roger, Dean of the medical faculty, acting on behalf of the Minister of Public Instruction. The agreement promises creation by the Minister of Hygiene of a national institute designed for the instruction of students in all matters pertaining to hygiene, for the training of specialists in hygiene and of non-medical technicians, and finally for the development by every possible means of scientific research as applied to hygiene.—*Jour. A. M. A.*, June 5, 1920, p. 1587.

+

War on Tuberculosis in Europe.—Relentless warfare on tuberculosis which is reaping almost unhindered toll among the undernourished populations of Europe, is advocated by the Medical Advisory Board of the League of Red Cross Societies, whose first annual meeting at Geneva has just ended. Increase in dispensary facilities, establishment of open-air schools for children and special education of the medical profession and the general public regarding tuberculosis are urged. Anti-tuberculosis demonstrations in countries where the disease is prevalent will be made.

In formulating the policy of the league regarding international health improvement and disease prevention, intensive study has been given essential phases of the work by the world's leading medical scientists assembled at Geneva. Besides recommending definite action in the war on tuberculosis, the Medical Board studied plans to combat epidemics, venereal diseases and malaria and suggested measures for the improvement of child health. Immediate organization of a child welfare unit and special training for doctors and nurses by means of scholarships by the league are favored as a beginning for improved health among children.

NOTES FROM FOREIGN LANDS

Translated by Mr. Homer N. Calver

Delivering the Dominican.—One of the benefits of living in a country occupied by the United States is having the advantage of intelligent health regulation that cannot always be laid down for any part of the United States itself. The state Secretary for Health of Santo Domingo is an American Naval Officer. In a letter to the District Sanitary officials of the island he calls attention to the fact that a patent medicine company in New York has started a campaign in Santo Domingo for the sale of its "malaria specific." Instead of merely warning the public against its use he invokes the law and its sale is prohibited. Thus America does for others what she cannot do for herself.—*Bol. Oficial, Rep. Dominicana*, May 30, 1920. (H. N. C.)

✱

World-Wide Sanitation.—This is an appropriate subject for a leading article in the first issue of a journal that deals with the International Problems of Public Health. Furthermore, it is a distinct compliment to the sanitary achievement of Americans and at the same time it is eminently fitting that this subject should be set forth by Professor Whipple.

Scientists already can see that world sanitation is not an impossibility. Statesmen and men of business are coming to regard it as a necessity. The new "Age of Power" has brought with it conditions fundamentally affecting the lives and health of people the world over. Modern industry has brought indoor life, monotonous work, low wages, congestion of population, faulty sanitation and bad housing. With improved means of communication has come speedier transmission of disease. World sanitation needs, therefore, to be directed in three main channels: (1) the safeguarding of home life; (2) the safeguarding of industrial life; (3) the prevention of the transmission of disease.

The science of health is one common to the physician and the engineer, applied by the former directly to man through the art of hygiene and by the latter to environment through the art of sanitation. Housing, industrial sanitation, excreta disposal, water purification and world pestilences are fields of endeavor for sanitarians. The at-

tack on the world-wide problems in these fields, however, must be made on a world-wide basis.

The Office International d'Hygiene Publique created at Paris by International agreement in 1907, has creditably fulfilled its function of spreading information. The League of Nations also has established a medical section. There is needed, however, an active central health service. This may be obtained by the coöperation or amalgamation of existing bodies, or if necessary by the organization of some new body.

World-wide sanitation is possible, but it will not come until there are sanitarians in every land and clime. New schools of sanitation must be established in strategic places and there must be a great spreading of the gospel of cleanliness throughout the world.—George C. Whipple, *Int. Jour. Pub. Health*, July, 1920. (H. N. C.)

✱

Capillary Differentiation of Bacilli.—An interesting modification of the technique of separating *B. typhosus* from *B. coli* by means of capillary attraction is possible by the use of filter paper. A strip of this is dipped into a solution containing a mixture of these organisms. The paper is then cut into pieces and the pieces seeded in culture media. In the media sown with pieces from the lower end of the strip, *B. coli* will grow. Pieces from the upper end of the strip will contain *B. typhosus* in pure culture.—*Bull. Off. Int. d'Hygiene Pub.*, February, 1920. (H. N. C.)

✱

A Worm Enemy of the Mosquito.—In *La Semana Medica* of Buenos Aires, Lischetti notes some curious observations on a worm of the genus *Planaire*. Six of these worms in four hours were able to destroy 100 *Culex* mosquito larvæ. After 10 minutes, they renewed the chase against 200 more.

The author describes the method of attack whereby the worm attaches itself to one of the breathing tubes of the larva. The victim is then carried to the bottom of the water and the worm devours the interior of the larva leaving only its chitinous envelope remaining. Adult larvae and pupæ are almost always able to escape the worm.—*Bull. Off. Int. d'Hyg. Pub.*, March, 1920. (H. N. C.)

Further Observations on Botanical Mosquito Control.—Public health lays all sciences under tribute. In the May issue of the JOURNAL there was noted the observation made in Corsica that duckweed growing on the surface of pools prevented the growth of the larvæ of the Anopheles. In the *Bulletin of the Royal Spanish Society of Natural History* for October, 1919, Caballero makes an interesting report on the same subject.

In the botanical laboratory of the University of Barcelona there were being grown for purposes of instruction, various aquatic plants in three large aquariums. One day the laboratory was found to be infested by a swarm of *Stegomyia* and at the same time there were noted in aquariums B and C large numbers of the larvæ of this species. The third aquarium, A, contained no larvæ. Here were growths of *Lemn minor* (duckweed) and *Chara fatida*. An examination of the outdoor reservoir from which the *Chara* had been transplanted into aquarium A showed it to be also free from mosquito larvæ though *Culex* abounded in the vicinity. The author undertook a series of experiments to determine if there really was a relation between the growth of *Chara* and the development of mosquitoes. He placed an aquarium containing this plant in a place swarming with mosquitoes. In a similar aquarium he placed eggs, larvæ and pupæ of the *Stegomyia*, *Culex* and *Anopheles*. In every case these died more or less rapidly.

It was noted by the Caballero that on the surface of the water in the aquarium in which the *Chara* was sown there began to form at the end of 24 hours iridescent whitish patches resembling those of a drop of oil. These patches little by little covered the entire surface with a fine continuous light gray film. A similar substance was observed on the surface of the reservoir. It appears without doubt that it is this film, which, preventing the mosquito larvæ from reaching the surface, caused their extinction.

It is not stated just what quantity of *Chara* is the minimum amount necessary to prevent the development of mosquitoes. It is possible that other varieties of the Characeæ will produce the same result. In any case the hardness, rapidity of growth

and world-wide prevalence of *Chara fatida* should encourage its introduction into those places that are favorable to mosquito breeding.—*Bull. Off. Int. d'Hyg. Pub.*, March, 1920. (H. N. C.)

+

Serbian Health Centers.—Since the arrival of the American Commission to Serbia at its field headquarters in that country, last October, child welfare and health centers have been established at five strategic points; a preventorium has been opened; another preventorium and a general hospital will be opened in the immediate future, with the assistance of the Ministry of Health and largely at its expense; public health education through the department of extension is contemplated; if funds permit, a campaign against tuberculosis in the districts reached by the centers; and a traveling health center was ready to begin work early in April. If the present campaign for funds in the United States continues successfully, the program of the Commission will be extended to other parts of Jugoslavia.—*News Summary*, Children's Bureau, Washington, D. C., June 1, 1920. (H. N. C.)

+

Boundaries of Health.—"We have a very good health officer, we pay him a very good salary, he gives us very good advice, and we take very good care not to follow it." This remark must surely have been made by a town councillor of Nottingham, England, for this town now finds itself in an awkward position for not following the advice of its health officer. Thirty-one years ago when he took office he recommended the abolishment of the dry system of sewerage and advocated the extensive adoption of water carriage. Each year he preached the same sermon, adducing statistics to show the dangers of the prevalent system. This growing city now wants to extend its borders to take in several other districts. The British Ministry of Health however notes that (1) sewage disposal arrangements are totally inadequate (2) no satisfactory explanation is given of why approximately 30,000 pail closets still exist in the city, and (3) 10,000 dwellings in the city are unfit for human habitation, members of the town council themselves being owners of some of these houses. In view of these conditions the Minister of Health

does not consider that he would be justified in granting any extension of the present city boundaries.—Editorial, *Medicine Officialer*, June 12, 1920. (H. N. C.)

✦

Sanitary Science in China.—Several years have elapsed since China first rubbed her drowsy eyes and awoke from several centuries of lethargic sleep. It is not surprising therefore to find that the Chinese Republic has accepted along with other western standards, the modern methods of teaching medicine and the principles of sanitary science and public health. In the calendar of preventive medicine, nine years is not reckoned a very long time in which to put into effect new series of measures that will eradicate disease-producing conditions that have existed for hundreds of

years. Great credit is therefore due the new government for the progressive way in which it has, with outside aid, notably that of the Rockefeller Foundation, instituted modern methods of disease prevention and control. Numerous hospitals and medical schools have been established and the Tsinanfu Institute is a unique school for the propagation of hygienic ideas among the masses. A committee on terminology has been appointed to determine the terms to be used throughout China.

Dr. Peter's work as a secretary of the Joint Council of Public Health Education has already been described in this country. By means of traveling exhibits, movies, lantern slides, etc., the vast ignorant mass of Chinese are being taught the modern principles of hygiene and sanitation.—W. L. Teh, *Lancet*, May 29, 1920. (H. N. C.)



CONVENTIONS, CONFERENCES, MEETINGS

November 4-5, Carbondale, Ill.—Southern Illinois Medical Association.

November 8-11, Louisville, Ky.—Southern Medical Association.

November 10-12, Atlanta, Ga.—National Drainage Congress.

November 13, Boston, Mass.—Massachusetts Society for Social Hygiene, Inc.

November 15, Louisville, Ky.—American Association of Medical Milk Commissioners.

November 18, Twin Cities, Minn.—Minnesota Public Health Association.

November 20-23, San Antonio, Tex.—Texas State Conference Social Welfare.

November 22, Washington, D. C.—Association for the Prevention of Tuberculosis of the District of Columbia.

November 24-29, Chicago, Ill.—Health and Sanitation Exposition.

December 2, Providence, R. I.—Rhode Island Medical Society.

December 6, Petersburg, Va.—Medical Society of Virginia.

December 6-11, Washington, D. C.—All-American Conference on Venereal Diseases. First Regional Health Conference. See advertisement, page xx.

December 6-30, Washington, D. C.—Regional Health Conference.

December 12-20, Montevideo, Uruguay—Sixth International Sanitary Conference of the American Republics.

December 14-16—Hot Springs, Va.—Southern Surgical Association.

December 22-26, New York City—American Dietetic Association.

December 27, Richmond, Va.—Virginia Health Officers' Association.

December 27, Richmond Va.—Virginia Conference of Health Workers.

December 27-January 1, Chicago, Ill.—American Association for the Advancement of Science.

December 29, San Francisco, Cal.—League for Conservation of Public Health.

December 30, Chicago, Ill.—Physiological Society.

January —, 1921, Boston, Mass.—Massachusetts Society for Mental Hygiene.

January 11, —, Neb.—Nebraska State Nurses Association.

January 17-21, Atlantic City, N. J.—National Cannery Association.

January 27, Boston, Mass.—Massachusetts Association of Boards of Health.

STATE HEALTH NOTES—GENERAL

Alabama.—In his special message to the extra session of the Legislature the Governor of Alabama took occasion to report on the activities of the State Board of Health in the interests of an appropriation for its use. He noted that there had been a complete reorganization and that the Board had been able to handle its appropriation in such a way as to more than double the amount expended under its supervision. These are some of Governor Kilby's statements:

The Bureau of Statistics promises to place Alabama in the registration area within the coming year. Great progress has been made in the control of communicable diseases. Practically every public water supply furnishing water to centers of population has been inspected and such improvements made as were necessary for the protection of the public health. A number of insanitary eating houses and lunch stands have been closed and others have been required to be made sanitary. Several thousand school children have been examined and the defects in several hundred have been remedied. Successful operations for mosquito control and anti-malarial work have been conducted in a number of communities.

There have been a number of free anti-typhoid treatments administered for the prevention of typhoid fever, and 1,000 free treatments are now distributed weekly to the several health officers. Midwives in every county in the state except 12 have been examined and furnished with sanitary kits containing sterile dressings for the baby and mother and a solution of nitrate of silver to be dropped into the eyes of infants immediately after birth for the prevention of blindness. The organizing of counties into health units goes on apace. The greatest obstacle is found in the scarcity of trained men to fill the office of county health officer. The public health nursing activities of the Red Cross and the Anti-tuberculosis League of Alabama have been coördinated with the State Bureau of Infant Hygiene and Public Health Nursing. The work of this bureau has found expression in infant welfare clinics, the weighing and measuring of babies and giving advice to mothers. The 15 child-caring

institutions of the state have been visited and a report of the findings has been sent to the superintendents of the institutions, with proper recommendations.

"Your especial attention is directed to the work of the Bureau of Venereal Disease Control," said Governor Kilby, in taking up what is a most important portion of the work of the State Board. "These diseases are striking at the very foundation of our social system and their control is the imperative call of the hour. The Board of Health has had to fight every step of the way in the administration of this law. It has met resistance in unexpected quarters and recently has had a fight in the courts." It appears that 55 of the counties, or 85% of the population, have either free or coöperative clinics. A computation in dollars and cents of the work of this bureau alone will demonstrate the magnitude of the dividends paid on money invested in public health work.

The laboratory has continued its work and maintained its position of usefulness despite inadequate facilities. Nearly 3,500 persons have received antirabic treatment, with only four deaths, while in the same time 23 persons who were untreated died from the disease, and this is testimony to the value of the department, which, in addition, has discovered and treated numerous cases suffering with other communicable diseases. "With the expansion of the work of the Health Department," said the Governor, the Laboratory becomes more and more a necessity. A modern building with modern equipment would seem to be an imperative need." In conclusion Governor Kilby congratulated the state that while bubonic plague has made its appearance in every other important port along the Gulf of Mexico, the port of Mobile has been protected.

One of the results of the spirited presentation of conditions by the executive was the introduction of a bill, passed by the Senate and now before the House, appropriating \$35,000 for the erection of a new laboratory building for the State Board.

A round table meeting of all the heads of departments in the Alabama State Board of Health was convened on September 4 to formulate coördinated plans for the department as a whole.

Colorado.—Three of the four first place winners in the International Mine Rescue and Safety First meet at Denver, Colo., September 9-11, were of Eastern teams. First place in the first aid contests was won by the New River Company, Captain Louis Roncaglione, of Searbro, W. Va. First place in the mine rescue contests was won by the H. C. Frick Coke Company of Leisnering, Pa., Captain S. Cominsky. First place in resuscitation work was won by the team from the Knox County Operators' Association, Captain John Moore, Bicknell, Ind. The fourth team to win first place was from the Wadge Mine of the Victor American Coal Company, Denver, Colo., Captain Robert Halbert, and its victory was on a combination of mine rescue and first aid work.

There were 85 teams in competition and on Saturday evening, September 11, all of the contestants assembled to listen to addresses and to witness the bestowal of gold medals and diplomas.

Georgia.—Dr. Gordon T. Crozier has been elected Commissioner of Health of Lowndes County, Valdosta, Georgia, to succeed Dr. J. D. Applewhite, resigned. Dr. D. H. Allen, Jr., has been elected Commissioner of Health of Baldwin County, Milledgeville, Georgia. The School of Public Health and Hygiene of the Medical Department of the University of Georgia opened for its first session on September 15.

Maine.—Six centenarians died in Maine last year, this being somewhat larger than the average number, three women, one of them, Mary Goddard, having an age of 108 and three men, two of them having touched the mark of 102 years. The largest number of persons of more than one hundred years of age to die in a single year was 12 in 1916, while in 1911 there were 9 and in 1903 and 1912 the number was 8; 110 to 113 is occasionally touched by these very old people.

Maine had in 1919 fewer births and fewer deaths than at any time before within the past 15 years. There were 1,085 fewer births recorded than in 1918 and 3,268 deaths less, so that on the whole there has been a gain in population. Marriages and divorces were

in 1919 at a maximum, there being one divorce for every six marriages.

In 12 out of the 20 cities of Maine the infant mortality was lowered last year, Waterville showing a figure of 62 per thousand births against 129 the preceding year; Bangor reduced the figure from 117 to 67 and Portland from 83 to 67.

Maine has established a rating for summer resort hotels, giving a state certificate to those with satisfactory sanitation. These certificates indicate a clean bill of health, and the display of them is an assurance to the guests of healthfulness and care. "The work of the Health Department in hotel inspection is attracting favorable comment in such prominent magazines as the Literary Digest and the publicity thus obtained is proclaiming Maine a safe vacation land," says Dr. L. D. Bristol, Commissioner of Health.

Massachusetts.—Mothercraft, the regular teaching of school children the elements of home-making and of the care of babies, flourishes in the state of its origin besides in many other places into which it has been introduced. Forty-one Massachusetts cities have had regular classes during the past year and 12 others have plans settled to begin the work. About 1,500 girls have been in these classes which have had the aid and support of prominent women's organizations in the state.

During the past twelve months inquiries have come from 32 states concerning the plan for the education of school girls in health and the care of babies. That the Massachusetts plan for establishing this kind of instruction is extending beyond the confines of our own country is shown by the inquiries that have been received from England, Norway, Sicily, France and Australia. The Victorian Order of Nurses in Canada became interested in the work and have established this instruction throughout the Dominion with the enthusiastic approval of the government authorities and the school officials.

Michigan.—A search for all probable cases of tuberculosis among Michigan's ex-soldiers is now being made by the 4,500 physicians within the state.

Under the direction of Dr. R. M. Olin,

Commissioner of the Michigan Department of Health, letters were mailed to every physician in the state asking that each report to the department any case where an ex-service man is known to be suffering from tuberculosis, organic disease, or mental derangement.

The present combing of Michigan for known, or suspected, sufferers with tuberculosis, is one of the many steps to be made by the department, in an effort to control the disease, since taking over the clinics of the Anti-Tuberculosis organization July 1. It is said to mark the inauguration of the department's active fight against tuberculosis in Michigan.

The answer to the question whether gas cases are certain to develop tuberculosis is now being sought by Dr. George H. Ramsey, who is in charge of the tuberculosis clinics of the Department of Health. The present opinion is, however, that while gas may have made the lungs of the soldiers more susceptible to tubercle bacilli, development of the disease is not inevitable. From his experience over-seas Dr. Ramsey is thoroughly familiar with the immediate effects of gas upon its victims.

A municipal Infant Welfare clinic has recently been organized in Pontiac, Mich., under the direction of Dr. C. A. Neafie, health officer.

Deaths attributable to alcoholism amounted to 15 in 1919, according to the annual report of the Detroit Department of Health. This is the lowest since 1914. In 1917 there were 136 deaths charged to this cause.

Detroit reports that the Health Department nurses, during October, November and December, 1919, discovered in the homes of children absent from school 21 cases of scarlet fever, 13 of diphtheria, 26 of whooping cough, 133 of measles, 45 of chicken-pox, and 2 of mumps. The majority of these cases would never have come to the attention of the Health Department had not the school nurses been on duty.

Eighty-eight per cent of school children are in need of corrective dental treatment according to the report of the Detroit authorities.

There are 12 baby clinics scattered over Detroit. Eight are maintained wholly by the Health Department. With four the

department joins hands with other organizations in a coöperative effort. The department, through its field nurses and its clinics, sees about 5,000 of the annual baby crop of 25,000.

+

New Jersey.—This state is suffering for the need of nurses. Public health work everywhere is being retarded by the shortage of nurses; public sentiment and public money in many places are ready, but workers are needed. In New Jersey, particularly, the chief need for the progress of child hygiene teaching under the State Department of Health is the need for nurses; nurses who are willing to go into rural communities; nurses who love babies enough and see into the future where they can visualize healthier and better boys and girls, because of the work done by them, when those boys and girls were babies and their mothers were ignorant of the value of mother-craft as it is taught by the Bureau of Child Hygiene.

+

New Mexico.—H. F. Gray, chief of the Division of Sanitary Engineering and Sanitation, has made inspections of public water supplies at Orogrande, Alamogordo, Carizozo, Socorro and Estancia. He has been appointed Collaborating Sanitary Engineer by the surgeon general of the U. S. Public Health Service, for the coöperative certification of water supplies used by interstate carriers.

+

New York.—At the request of the Public Health Council the Engineering Division of the State Health Department is making a sanitary survey of the Palisades Interstate Park. This park, which is some 36,000 acres in extent, lies between the Palisades and the Ramapo Mountains, extending over into New Jersey. It is controlled by a joint commission and supported by funds from the two states. There are about sixty public camps within the reservations, with boats and camp equipment, and these are rented to responsible organizations. In addition permits are issued for individual camps. Each of the permanent camps is supplied with water and with sewerage facilities. The survey will include detailed studies of sanitary conditions at all the camps.

The Engineering Division is also looking into the sanitary conditions of county fairs, with reference to water supplies, sewage disposal and garbage and refuse disposal and toilet facilities. The authorities in charge of the fairs will be advised with reference to proper methods of procedure and it is intended to remove many of the sources of dissatisfaction at the grounds of the fairs.

The incidence of anterior poliomyelitis in New York state, exclusive of New York City, has been the following:

	Cases
January to July.....	10
July	4
August	6
September (1-22)	9
	<hr/> 29

While this number of cases is not abnormal and should cause no apprehension, the sharp rise in the number of cases reported in the eastern part of Massachusetts during the summer months makes it advisable for every health officer to be on the alert. The New York City Department of Health states that there has been no unusual incidence of poliomyelitis, 43 cases and three deaths being the toll of this disease since January 1.

Seventy-nine cases of typhoid developing at Seneca Falls have apparently been due to the contamination of the village water supply from an infected private water supply through a leaky automatic check valve. How many typhoid epidemics must occur before managers of industrial concerns will learn that single automatic check valves can not be depended upon?

Health officers are urged by the New York authorities to investigate all private industrial water supplies in their district where the water is of questionable quality. Where single automatic check valves are discovered the manufacturer in question should be urged to completely sever all connection between the public and private supplies or to install a double check valve in accordance with the recommendations of the Engineering Division of the State Department of Health, which may be obtained on application. The *Journal* has discussed this subject. See *Public Water Supply Contaminated by an Interconnected Private Water Supply*, September, 1920, issue.

The following health district consolidations have recently been ordered: Montgomery County: town of Palatine, Palatine Bridge and village of Nelliston; Jefferson County: town of Housfield and village of Sacket Harbor.



Correction.—On page 814 of the October *Journal* it is stated that the Health Bureau of Albany, N. Y., has been made a separate department under Dr. Clarence W. Buckmaster. This should refer to Yonkers and not to Albany.



New York City.—Fifty-one dental clinics in Manhattan are giving their services to the public free or at nominal charges, according to a directory of dental clinics which is being published by the Health Service Department of New York County Chapter American Red Cross. Eleven of these clinics specialize in work for children.

The directory is the result of a canvass recently made by the Health Service Department, and gives location and office hours of each clinic; the type of work done, whether general, surgical or X-ray; the character of the charge, if nominal; and the agency conducting the clinic.

It is to be distributed generally among day nurseries, settlement houses and other public health and social agencies where dental information will reach the largest number of people.

More than 275 inquiries on health subjects were received during July alone by the Health Information Bureau of New York Chapter American Red Cross, according to a report of the bureau just issued.

This is an increase of over 100% on the total of inquiries for June, which in turn doubled the totals for May. Inquiries as to clinics and dispensaries lead in number, with requests for advice on tuberculosis sanatoriums, and the proper feeding of tuberculosis patients, a close second. Inquiries come as much from individuals as from institutions, according to the report, so that it is not only the public health agencies of the city which are finding this clearing-house for health information valuable, but the average citizen.

North Carolina.—Compared with last year North Carolina at the close of August was the richer by more than half a million dollars saved by the reduction of typhoid fever. During the three summer months, when the toll of typhoid is heaviest, there were 692 less cases this year than last, and about 70 less deaths from this cause.

The figures by months of cases of typhoid reported to the State Board of Health for 1919 were: June, 432; July, 741; August, 503; for 1920, June, 152; July, 396; August, 436. Total for 1919 was 1,676, as against 984 for the present season.

Five years ago the number of typhoid cases in the state was running in excess of 7,000 a year. The remarkable reduction, with its consequent saving of life, has been accomplished by an intensive and extensive campaign against this disease, which has reached virtually every corner of the state.



Texas.—Dr. C. W. Goddard, state health officer for Texas, having resigned September 1st to accept the chairmanship of the medical staff of the University of Texas, Dr. Oscar Davis was appointed by Gov. W. P. Hobby to succeed him. Dr. Goddard served as health officer since February, 1919, and during that period rendered excellent service in raising the health standard of Texas. Dr. Davis served with the department prior to Dr. Goddard's administration and has been with it ever since as director of the Bureau of Venereal Diseases.

The winner of the state prize of \$25 in the health essay contest conducted in the state normal colleges during the summer sessions was S. M. Calloway of San Marcos, a student in the Southwest Texas State Normal College in that city. This announcement is made by the Texas Public Health Association, which conducted the contest and awarded the prizes.



Virginia.—“Banish the common drinking cup and you will have gone a long way toward getting rid of diphtheria and scarlet fever.” This is the message that the State Board of Health is sending broadcast throughout Virginia now when the schools are reopening and the season for those diseases is approaching.

Among the means of disease transfer, the

common drinking cup ranks as the chief; and that is why the board is urging its abolishment. It is perfectly simple to fasten a drinking socket where there is running water and it is not so difficult to attach these to pumps.

The big health event of the year in Richmond is scheduled for October 7-8, when the North Atlantic Tuberculosis Conference, to be held under the auspices of the National Tuberculosis Association, will convene at the Jefferson Hotel auditorium. Between 200 and 300 persons actively interested in the war on tuberculosis will attend the conference and will hear discussions of methods in every-day use in the fight against the great white plague.

A joint campaign directed by the State Board of Health, the U. S. Public Health Service and the International Health Board was recently concluded at West Point, and people are now sitting at night on unscreened porches, something they had never done before. This undertaking on the part of West Point involved the expenditure of a considerable sum of local money for drainage and oiling; but the results have been satisfactory far beyond expectation; and already the work here has influenced other places in the vicinity to inaugurate similar efforts.

An interesting demonstration of the value of sanitation in reducing the incidence of and deaths from infantile diarrhea comes from Dr. William S. Keister, Field Director for Albemarle for the State Board of Health.

Dr. Keister reports that physicians of the town of Crozet, Albemarle County, declare that no cases of infantile diarrhea have occurred this summer since the sanitation of the community. Health workers believe that this disease, which brings death to so many little ones, can be abolished along with typhoid fever by proper sanitation and the consequent disarming, to a great degree, of the fly menace.

At the call of the State Health Commissioner a conference of city health officers was recently held at the State Capitol. At that meeting it transpired that Richmond and Norfolk were conducting a general campaign for the destruction of rats, which are the chief carriers of the plague. The State Health Department, in conjunction

with the United States Public Health Service, was requested at the meeting to coöperate in a rat survey of the Hampton Roads cities, Norfolk, Portsmouth and Newport News, for the purpose of determining whether any of the rats in those cities are affected. Virginia realizes that there is no occasion for hysteria, but it is not going to neglect obvious means of precaution.



West Virginia.—F. F. Farnsworth, P. A. Surgeon, U. S. P. H. Service, Director of the Bureau of Venereal Diseases, has reported on the second year of the coöperative work. The need of the work is sufficiently established in the percentage of arrested individuals examined who were found infected, namely, 71. The activities of the year are briefly these:

Number of cases venereal disease reported	11,650
Number of physicians making these reports	685
Number of free clinics controlled by this bureau	9
Number of cases treated in clinics controlled by bureau	1,126
Number of cases treated in hospitals not controlled by bureau.....	2,564
Number of doses of Arsphenamine furnished free by this bureau.....	2,671
Number of cases arrested and examined	540
Per cent of those examined found infected	71%
Number of cases detained or quarantined	187
Number of pamphlets distributed.....	57,422
Number of moving picture showings.	105
Number of stereopticon slide showings	186
Total attendance at these showings..	3,500
Number of public addresses made....	156

Total attendance at these meetings...	22,150
Number of legal prosecutions (some still pending)	47
Number of convictions (this does not take into consideration ordinary police court prosecutions).....	11

Free clinics were established and maintained to the number of nine, in Wheeling two, Parkersburg, Blufffield, Charleston, Glendale, Huntington and Elkins, two. In addition to these a large number of physicians are coöperating with the state in giving free treatments both in private practice and in public hospitals. The laboratory has made 2,700 Wassermann tests and other examinations. Some 20,000 doses of Arsphenamine were administered. One of the important features of the work is that every dollar of federal or state money used in the work has set in motion at least ten other dollars in the hands of interested citizens.



Wisconsin.—To acquaint medical men of the state more fully with their obligations as guardians of the public health, representatives of the Wisconsin State Board of Health recently visited a number of county medical societies and addressed them on public health movements whose success is largely dependent upon the practicing physicians. These speakers were Dr. Robert Olesen, acting Epidemiologist; Dr. W. D. Stovall, Director of the State Laboratory; and Dr. I. F. Thompson and Dr. G. W. Henika, of the Bureau of Social Hygiene.

Citizens of Appleton, Wis., and adjoining communities have subscribed \$500,000 to build a new St. Elizabeth's hospital to enlarge the city's hospital facilities which are now totally inadequate for the demand.

Dr. A. J. Dana has been elected health officer of Fond du Lac, Wis., to succeed Dr. N. J. Malloy, resigned.

The JOURNAL is always pleased to publish items of interest with reference to health procedure in the different states. Every month a blank form of request for such items together with a sheet outlining the kind of news desired is sent to every State Department of Health in the country. If no items appear in this section of Public Health Notes, it is because no response has been made to these requests.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Francis H. Slack, M. D., and Mr. James M. Strang.

Once a Typhoid Carrier, Always a Typhoid Carrier.—The following description of the routine followed in the laboratories of the Massachusetts State Department of Health for the detection of typhoid carriers is of interest. "The bacteriologic laboratory distributes a double mailing case enclosing a rubber-stoppered test-tube containing 30% glycerol in 0.6% sodium chloride solution. This outfit is used for sending specimens of feces and urine to the laboratory. The amount of feces sent is, as a rule, about one-fifth of the total volume of the emulsion and the amount of urine about one-half. As soon as the specimen arrives at the laboratory it is streaked with a platinum loop on large (13 cm.) plates of Endo's medium prepared fresh each day. The eosin-methylene blue agar of Holt, Harris and Teague is also used. For specimens of feces two plates of each medium are used and two or three loopfuls of the feces suspension are used to a plate. For urine, approximately 20 loopfuls to a plate are used. After 18-24 hours, incubation at body temperature, six or more colonies resembling *B. typhosus* are fished and each inoculated into 2 cc. nutrient broth. Should no suspicious colonies be seen but many colonies of the colon group, fresh plates are streaked with the specimen, then 24 hours older. It has been found that glycerol inhibits colon bacilli more than typhoid and that an older specimen showing fewer colon colonies on a plate occasionally gives positive results because there is less overgrowth of the typhoid bacilli with other organisms.

After 4-6 hours' incubation at 37° C., the broth cultures are examined in hanging drop for motile bacilli resembling typhoid. If any are found they are mixed with a typhoid agglutinating serum, in appropriate dilution, and examined within an hour for agglutination.

If one of the cultures is completely agglutinated it is inoculated into dextrose and lactose broths in fermentation tubes.

A culture-forming acid in dextrose broth and no gas in either sugar broth within 48 hours is reported as *B. typhosus*—Stanley H. Osborn and Edith A. Beckler, *Jour. Inf. Dis.*, Aug., 1920.

♦

Elective Staining of Influenza Bacilli.—The material containing the bacilli is spread out in a thin film, dried in air and fixed in alcohol. After treating with 5% mercuric chloride for 15 minutes, a warm 10% solution of sodium hyposulphite is added for 1 minute, the preparation is stained and washed with carbolic fuchsin for 10 minutes. The slide is again washed, decolorized with 5% anilin chlorhydrate for 15 to 30 minutes and, after washing again, counter-stained with methylene blue for 1 minute. The Pfeiffer bacilli are colored red with black central bodies, while other organisms stain blue. By this method of staining the author found these bacilli in the blood, especially in all cases of grippe.—Palina, *Centralbl. f. Bakt.* 1919, 83, 507.

♦

Can the Sachs-Georgi and Meinicke Reactions Replace the Wassermann in Every Case?—In more than 700 cases examined, 86% gave concordant results by the Sachs-Georgi and Wassermann tests. Several cases of fevers which were not syphilitic and a few of soft chancre gave a negative reaction. As a rule there are about 5% more positive cases by the S-G than by the Wassermann test. The age of the specimen for the S-G test is very important, the results from a serum 5 days old cannot safely be trusted. In about 3% of the cases, the S-G test cannot be carried out on account of spontaneous flocculation of the serum. The Meinicke reaction was tried on 366 serums and in 12% of the cases, was found to be positive for subjects who were non-syphilitic.—Merzweiler, *Deutsch. Med. Woch.* 1919, Nov. 13, *Abst. in Bull. Inst. Past.* 1920, 18, 262.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Strength Tests in Industry.—Different jobs have different standard strengths. Some individuals also have fluctuations in physical condition daily. Tests of daily variations in strength are fundamental in fatigue. A special method of testing strength is described for most of the readily available muscles in the body and several illustrations are presented. The data upon which the conclusions are based represent 5,518 tests among 305 factory workers in two establishments, the first, a brass factory, engaged at the time in making shell fuses, and the second, a large automobile factory. Strength as affected by external factors, as a criterion of physical condition, as a criterion of fatigue and as a test of the effects of work upon night-workers was experimentally determined. There is a distinct tendency for the strength of all male workers in a single environment to fluctuate similarly from day to day. External factors act on all the workers alike. Psychological influences, such as the arrival of pay day may be operative. Strong male workers show less fatigue than do weaker workers regardless of the nature of the work. External factors, such as temperature and relative humidity, affect strength. The impairment of physique due to exhaustion may be so severe as to require considerable time for recovery to normal strength. There is evidence that the effects of fatigue are persistent, in that they tend to appear on the day following a day of fatigue. Days of poor physical condition are most likely to be followed by days of fatigue than are days of good condition. There is no evidence that the strain of night work in an eight-hour shift, changing every two weeks, impairs physique. However, a permanent night shift, working 12 hours nightly 5 nights in a week, averaged 15% lower in strength than the day shift doing precisely the same work; but the evidence is insufficient to decide whether or not this poorer showing was actually due to night work. The most pronounced indications of fatigue are presented in an opera-

tion requiring close concentration and carried on in a disagreeable environment.—E. G. Martin, *U. S. Public Health Reports*, August 13, 1920, Form 35, No. 33, 1895-1926.

†

Safe Practices in Cleaning and Finishing Rooms in Foundries.—The first part of this bulletin discusses accident prevention in particular, after which special sections are given to correct methods for removal or control of dust and of sand-blasting with a citation of the desirability for the physical examination of workers since some apparently strong men may have a predisposition to diseases of the lungs. Protection to the eyes in welding, precaution in dipping and pickling rooms, safe types of clothing, precautions against the dangers of painting are discussed in other sections. The illumination sections are devoted to daylight, washing the windows, white-washing the walls, artificial light, and portable lamps. The bulletin is well illustrated.—*National Safety Council*, 168 North Michigan Avenue, Chicago, No. M. E. 1 (revised 1920).

†

Finding Employment for Disabled Civilians.—The Institute for Crippled and Disabled Men, 101 East Twenty-third Street, New York City, has recently compiled tables to show what jobs men with certain disabilities have secured through its bureau. The institute now has records of 2,200 cases of men and boys suffering from orthopedic difficulties. The Institute has placed 1,800 handicapped men. The list of occupations which men with different deformities have secured covers six pages of the citation. One result of this survey is the discovery of how few men with arm amputations (only 165) have been placed. A one-armed man cannot place himself without almost superhuman efforts. Many of the placements for these have not been constructive. The bureau is always on the search for jobs for which men with arm disabilities can be trained.—Gertrude R. Stein, *Monthly Labor Review*, Bureau of Labor Statistics, Washington, D. C., April, 1920, 147-154.

Chronic Copper Poisoning, Does It Exist?
—Peigney had the opportunity of studying the effects of work in a French factory engaged in the manufacture of fuses during the war. The plant employed on the average 2000 women and 700 men. The work was with copper. While various ailments were observed, those peculiar to the industry were reduced to gastro-intestinal troubles which affected particularly the younger women workers. Peigney describes the 36 operations carried on and the exposure to copper sometimes associated with oil, sometimes as dust, etc. He next describes a number of typical cases of poisoning alleged to be due to copper. In brief, about one-third of the women employes suffered from acute gastro-intestinal attacks consisting of colic, nausea, vomiting, and profuse diarrhea. The colic feature was not pronounced. There was pallor, prostration and considerable sweating. There was no fever. The pharynx was reddened. The attacks lasted from one to several days, sometimes accompanied with bladder pain and frequent urination. After a year or so an immunity seemed to be established. Peigney considers these attacks due to the salt action of ingested copper and that it is not a true constitutional copper poisoning in the sense of a destructive affair like lead with its grave anemia but that it is an irritation of the organism extending even to the blood forming tissues and resulting in some cases in an increase in the blood elements, including the leucocytes. These blood changes were noticeable during the first two years' employment; thereafter the blood finding became normal.—Peigney, *Revue D' Hygiene*, Jan.-Feb., 1918, Vol. XL, No. 1, 66-85.

+

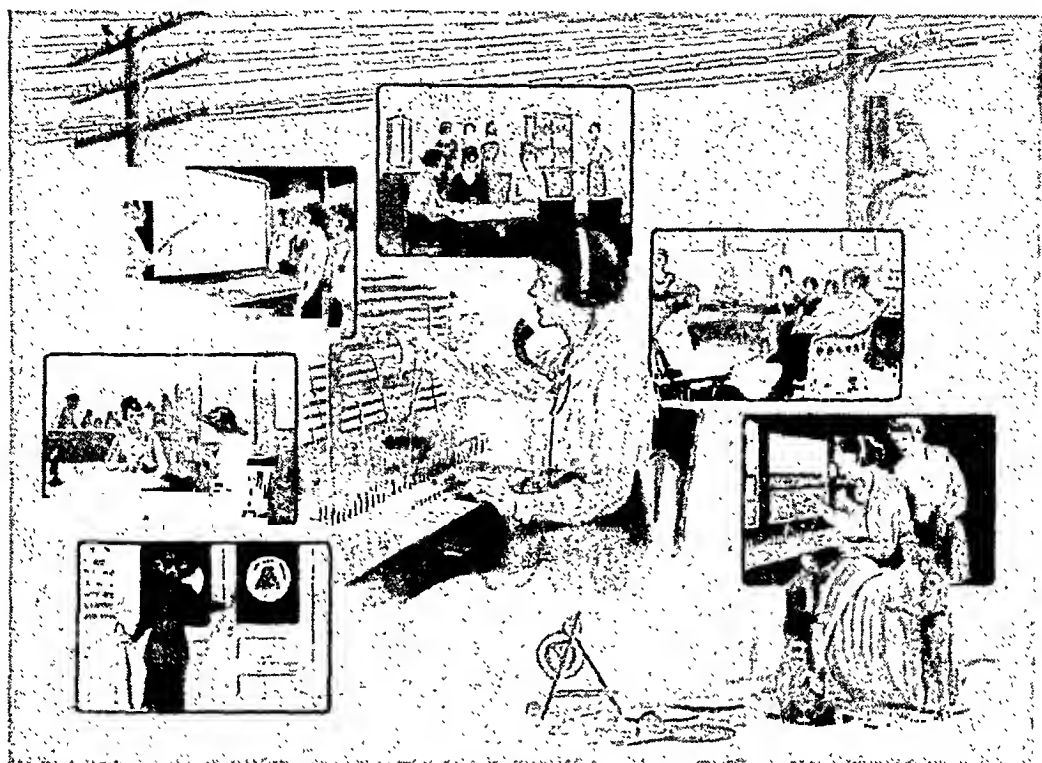
Poisoning by Heavy Metals.—Salant and his associates have been engaged in research on the toxicity of heavy metals for some years and he presents a summary of various papers published elsewhere. The presence of these heavy metals in the canning industry has been of chief concern. The action of zinc when taken by mouth is not very injurious but when introduced directly into the circulation it produces

marked heart depression and slowed action of smooth muscles. It is a general protoplasmic poisoning. On elimination, it damages the kidneys and produces albuminuria and sugar in the urine. When taken by the mouth some of the ingested zinc is absorbed from the intestinal canal and this is also the main channel of elimination, the kidneys playing a very subordinate role in ridding the body of zinc. It is stored in considerable amounts in the liver. Experiments with tin showed that moderately large amounts given daily with food for fairly long periods may prove harmful to health. It resembles zinc in being eliminated principally by the intestinal canal although the kidneys will excrete more tin than they will zinc. Tin is very slowly absorbed from the intestines, probably because of the insolubility of its salts. It was found that copper sulphate in the circulation produces a prompt depression of the heart action. A more detailed study of the influence of nickel, copper, cadmium, and zinc on the isolated heart will appear shortly in the *Journal of Pharmacology and Experimental Therapeutics*. While some of the heavy metals are very poisonous, it is necessary to recognize the very important fact that they are apparently well borne for a considerable length of time when taken with food. Disturbances of function, or diseases, of the intestinal canal may permit these metals to become absorbed and exert their poisonous effects. The public is entitled to the benefit of the doubt in these cases and caution should be exercised in permitting the manufacture and sale of foods containing even small amounts of such metals.—Wm. Salant, *Jour. of Industrial Hygiene*, June, 1920, 72-77.

+

Manufacture and Use of Wood Alcohol.—The National Committee for the Prevention of Blindness coöperating with the Safety Institute of America and the National Safety Council has prepared recommendations covering the manufacture and use of wood alcohol which are regarded as fair to the manufacturer, while at the same time aiming to protect the people from misuse of the poison.—Gordon L. Berry, *Safety*, Sept. Oct., 1919.

12-EE-1920



Training For Service

What science and engineering have done to develop the mechanical efficiency of the telephone, specialized training has done in the development of workers.

Plant engineers, linemen, directory clerks, toll operators, equipment installers, electrolysis engineers, trouble hunters, line repairmen, test table operators, chief operators, contract agents, building engineers, line installers, exchange repairmen, plant inspectors, trouble operators, fundamental plan engineers, draftsmen, estimate clerks, exchange operators, cable testmen, equipment inspectors, wire chiefs, traf-

fic engineers, galvanometer men, cable splicers, facilities engineers, surveyors, information operators, switchboard installers, accountants, testmen, supervisors, station repairmen, equipment engineers, directory operators, statisticians, appraisal engineers, routing operators and scores of other skilled employees are specially trained for the exacting work of providing telephone service.

Throughout all work of telephone construction and operation there is a ceaseless endeavor at mastery of service that makes for improvements beneficial to the public.



AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy

One System

Universal Service

And all directed toward Better Service

Health officers, clinicians, nurses, social workers, judges and probation officers of courts of domestic relations and juvenile courts, police matrons, policewomen, superintendents of eleemosynary institutions, chiefs of police, medical officers of business institutions, laboratory technicians, urologists, dermatologists, gynecologists, neurologists, psychologists and the employed officers of other medical and social organizations are invited to attend an

Institute on Venereal Disease Control and Social Hygiene

Conducted under the auspices of the

UNITED STATES PUBLIC HEALTH SERVICE

With the assistance of

The Interdepartmental Social Hygiene Board
and

The American Social Hygiene Association
WASHINGTON, D. C.

November 22 to December 4, 1920

The faculty will be composed of the following:

John A. Fordyce	M. A. Bigelow
Bernard Glueck	C. C. Carstens
Edward L. Keyes, Jr.	C. B. Davenport
John H. Stokes	Katharine Bement Davis
William A. White	Martha P. Falconer
Hugh Young	Leta S. Hollingworth
William F. Snow	Thomas A. Storey

and twenty-five other specialists.

Fourteen courses on the medical, legal, social and educational phases of venereal disease control are offered.

Accurate Instruments

Selected from
the Leading Makers of
the Country

For Your Fall Needs

We can deliver promptly

Spencer Microscopes
Spencer Microtomes
Bausch & Lomb Apparatus
Colorimeters
Haemoglobinometers
Autoclaves
Incubators
Sterilizers
Chemical Balances
Haemacytometers
Glassware

Chemicals and all apparatus
necessary for the Laboratory
and Institution.

Consult us before
purchasing

F. H. THOMAS COMPANY

New England's Leading Supply House
for Physicians, Surgeons and Hospitals

689-91 Boylston Street
BOSTON, MASS.

STERILAC

An alkaline mixture of the water-soluble chloramines; phenol coefficient of 45.

A clean, safe, practical disinfectant and deodorant. Neither poisonous nor caustic. Will not injure rubber or metal parts. Hence suitable for use in hospitals, dairies, butter factories, ice cream plants, canneries and wherever foods are handled. **STERILAC** leaves no odor nor taste.

One measuring capful or heaping teaspoonful in 2 to 10 gallons of water makes an effective sterilizing solution for milking-machines, bottles, cans, churns, tubs and all food containers. Keeps food from spoiling and pantries, ice-boxes, sinks and drains clean and free from foul odors. A good rinse for disinfecting utensils of all sorts in operating rooms, kitchens, markets, restaurants and at soda fountains. Used, also, for sterilizing suspected drinking water on the farm for live stock and in the home.

STERILAC is surer and quicker to act than chloride of lime or chlorinated soda. Not smelly nor mussy like cresols. In powder form, another great advantage.

In 10-ounce bottles, sufficient for making 300 gallons of solution. Price, \$3.00, net. Also to be had in bulk. Prices quoted on request.

Write for **STERILAC** booklet.

THE ABBOTT LABORATORIES

Home Office and Laboratories

Dept. 3, Chicago, Ill.

New York San Francisco Seattle
Los Angeles Toronto Bombay

School of Public Hygiene of The University of Pennsylvania

Eleventh year begins September 24, 1920. Courses are given in preventive medicine and epidemiology; industrial, personal, camp, school, meat and milk hygiene; sanitary engineering, entomology, parasitology, bacteriology, immunology and serology, sanitary chemistry, vital statistics.

The first year of the course is devoted to intensive laboratory instruction with didactic teaching to amplify and coordinate the laboratory work. The second year of the course is devoted to field work in public health administration and in the management of special hospitals and public health laboratories.

The courses are arranged for students preparing for the Dr. P. H. degree, and for the Ph. D. degree in public hygiene.

For announcement and further information address the

Director, School of Public Hygiene
University of Pennsylvania
Philadelphia, Pa.

OHIO STATE UNIVERSITY

Offers
**Courses in Public Health and
Science Nursing**

To meet the pressing demand for well-equipped women in the field of public health nursing, the Department of Health and Sanitation, College of Medicine, Ohio State University, is offering:

An eight months course in public health nursing for which a certificate is given to properly qualified graduate nurses. Equal time spent in class and field work. Classes begin September and February. Scholarships and loan funds will be arranged in a limited number of cases.

A four months course in public health nursing to graduate nurses and social workers, desiring public health training.

A course in science nursing which enables women to obtain a B. S. degree and complete nurse training in five years.

For detailed information write

MRS. NORMA SELBERT
Ohio State University
710 North Park Street, Columbus, Ohio

SCHOOL OF PUBLIC HEALTH OF

Harvard University

AND THE

Massachusetts Institute of Technology

Eighth Year Begins September 27, 1920

Courses in preventive medicine, hygiene, sanitary engineering, laboratory procedures, public health practice and administration, vital statistics, etc., leading to a

CERTIFICATE IN PUBLIC HEALTH
C. P. H.

New courses in Industrial Hygiene in the Harvard Medical School are open to students in the School of Public Health.

For information and catalogues apply to
DIRECTOR, SCHOOL OF PUBLIC HEALTH
Harvard Medical School
240 Longwood Avenue
BOSTON, MASS.

The Graduate School of YALE UNIVERSITY
offers courses of study leading to the

Certificate in Public Health

and the degrees of

Doctor of Public Health and

Doctor of Philosophy (in Public Health)

¶ The course for the Certificate occupies one year and is open to men and women who have received a bachelor's degree or have completed at least the first two years in a medical school of high standing.

¶ The course for the Doctorate in Public Health is a two years course for medical graduates.

¶ The course for the Doctorate in Philosophy is the usual three years course for those who hold their bachelor's degree.

¶ Further information in regard to the scope of the courses and the specific requirements may be obtained by addressing the

DEAN OF THE GRADUATE SCHOOL

Yale University
New Haven, Connecticut

PUBLIC HEALTH CLIPPINGS

The two best tests of the degree of Civilization which a country has attained are the state of its education and the attention it devotes to public health.—*London Daily Chronicle.*

✦

Not Short of Names

A nurse among Southern negroes was getting the family history.

She had reached No. 6 and asked her name.

"Tonsil," said the mother.

"Tonsil!" repeated the nurse in surprise, "how do you spell it—T-o-n-s-i-l?"

"Ah guess so," smiled the darkey.

"Are you going to call the next one 'Adenoid'?"

"Ah doan know, ma'am, but dat shuah am a purty name!"—*North Dakota Pennant.*

✦

Pay for Your Share

"Public Health is purchasable," says the United States Public Health Service, and adds that a first-class health protection service can be provided for one dollar per head per year. In fact, some city health departments render excellent service at a cost of seventy-five cents per head. Let's all get together and give better support to health work in this community.

✦

Immune

"William Jennings Bryan has sounded the tocsin, and—"

"That's all right!" interrupted J. Fuller Gloom. "I have taken an antitoxin."—*Judge.*

✦

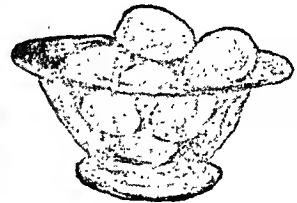
Watch Your Step

This is a fine slogan to be observed in buying shoes. Get them large enough, built on sensible lines and most of your corns and bunions will disappear.—*Connecticut Health Slogan.*

✦

Prevention

Give your physician a chance to keep you well before you call him in to cure you. An occasional thorough examination by a competent physician will save you money and prolong your life.—*Connecticut Health Slogan.*



What Foods Contain

The oat is well-balanced nutriment — 16.7% protein, 7.3% fat, 66.2% carbohydrates.

Meat, eggs and fish yield no carbohydrates.

Quaker Oats contain 7.7% water and no refuse.

Water and refuse form two-thirds of beef, 76.7% of eggs and 85% of whole mackerel.

Quaker Oats yields 1810 calories per pound. Round steak yields 890.

Quaker Oats costs 6½ cents per 1,000 calories. Average meats cost 45c, fish 50c, eggs 60c.

There are these great reasons, and others, why Quaker Oats should be the basic breakfast.

Quaker Oats

Flaked from queen grains only—just the rich, plump flavorful oats. We get but ten pounds from a bushel. The use of these delicious flakes makes the dish doubly delightful.

The Quaker Oats Company
Chicago

Pathological, Bacteriological, Chemical and Laboratory Apparatus

Burettes	Van Slyke CO ₂	Van Slyke Amino Nitrogen
Pipettes	Thermometers	Van Slyke Cullen Urea
Volumetric Flasks	Centrifuges	Drying Ovens
Cylinders	Centrifuge Tubes	Test Tubes
Filter Paper	Pipette Boxes	Porcelainware
Fermentation Tubes	Petri Dishes	Hydrometers
Filter Flasks	Erlenmeyer Flasks	Petri Dish Holders

The Emil Greiner Company

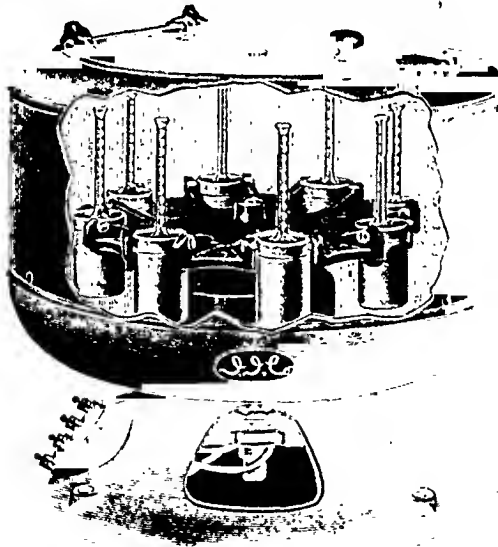
Established 1881

Incorporated 1905

Fulton and Cliff Streets, New York, N. Y.

BOARD OF HEALTH LABORATORY—Milk Testing

Electric Babcock
Testers
8-bottle
16-bottle
24-bottle
sizes



Babcock Test
Glassware
Massachusetts
Tested

INTERNATIONAL EQUIPMENT COMPANY

*Send for Catalog Cp.

352 Western Avenue, Brighton, BOSTON, MASS.

PUBLIC HEALTH CLIPPINGS—Continued

Health Maxims

Fear of a disease never caused disease.
Streets are dangerous playgrounds for children.

Chew your food more, and gum less.
The stomach has no teeth.

—*Buffalo Sanitary Bulletin.*



What's in a Name?

The doctor said, as he bent over the patient, "I don't quite like your heart action." Then, as he again applied the stethoscope, he added:

"You have, I take it, had some trouble with angina pectoris?"

"Well, doc," said the young man, rather sheepishly, "you're partly right; only that ain't her name."—*The Black Watch.*



House Hunting Hints

How many rooms have sunshine?
Is every room provided with sufficient ventilation?

Are all free from dampness?
Are the walls and ceilings clean and paper and paint in good condition?

Is the bathroom light, bug-proof?
Are the plumbing and fixtures in good condition?

Is the basement light, dry?
Today's question is, "Where is there any house, good or bad?"



Legible Enough

"The prescriptions of a doctor
May be hard to read," said Hill,
"But one hasn't any trouble
In deciphering his bill."

—*Boston Transcript.*



A Man Who Loved the Out-of-Doors

There are many troubles which you cannot cure by the Bible or hymn book, but which you can cure by systematic exercise and fresh air.—*Henry Ward Beecher.*



Sympathetic Visualization

Professor: "Now I put the number seven on the board, what number immediately comes into your mind?"

Class (in unison): "Eleven."—*Lehigh Burr.*



The
Safe
Way
Is The
Easy
Way

No. 5. COVERED SPUTUM CUP.
An all-paper "Burnitol" Cup.

"To be Certain — Burn-it-All"

There is only one safe and satisfactory method of collecting and disposing of SPUTUM, and that is by using paper receptacles, made for the purpose, which can be burned entire with their contents, making it unnecessary to take any chance of infection.

BURNITOL SPUTUM CUPS
Are the Recognized Standard.

Two Popular Models.

Made of the finest grade of heavyweight pliable paper, thoroughly treated and highly finished. Will not crack or break when FOLDING. Burnitol cups have turned-in flaps with interlocking corners to prevent spilling of contents—a very practical feature, as experienced nurses know. Although pliable, they possess remarkable stiffness and rigidity.

FREE SAMPLES
AND CATALOG CONTAINING FULL PARTICULARS OF BURNITOL PRODUCTS
MAILED UPON REQUEST.

Burnitol Manufacturing Co.

Chicago Office: 37 N. Market St. San Francisco Office: 635 Howard St.

General Office and Factory:
Everett Station, Boston, Mass.

SEE
THAT
THUMB
HOLD?

An added convenience for the easy withdrawal of the fillers.

This COVERED HOLDER model made in polished nickel or lacquer finish.



CHO CHO

The Joyous Spirit of Health

Interests the Children with
Rhymes and Pictures

HE is the principal character in
THE CHILD HEALTH
ALPHABET. This little book
was prepared by the Child Health
Organization so that teachers could
make personal hygiene entertaining
to their youngest pupils. Last year
our agents placed a million copies,
largely in the public schools.

A limited number of copies are
now available for distribution. You
can obtain them through our local
representative, or by writing to the

WELFARE DIVISION

Metropolitan Life Insurance Co.

1 Madison Avenue, New York

NATIONAL HEALTH INSURANCE

AND THE

MEDICAL PROFESSION

To Scientific
and
Medical Men
these addresses
will be
sent on request,
free of charge

Addresses by

FREDERICK L. HOFFMAN, LL.D.

Third Vice-President and Statistician
The Prudential Insurance Company of America

Send for this free literature on

HEALTH INSURANCE

- Facts and Fallacies of Compulsory Health Insurance (1917)
- Public Health Progress Under Social Insurance (1917)
- Autocracy and Paternalism versus Democracy and Liberty (1918)
- Failure of German Compulsory Health Insurance: A War Revelation (1918)
- Health Insurance and the Public (1919)
- More Facts and Fallacies of Compulsory Health Insurance (1919)
- National Health Insurance in Great Britain (1920)
- Poor Law Aspects of National Health Insurance (1920)
- National Health Insurance and the Medical Profession (1920)



The PRUDENTIAL INSURANCE COMPANY OF AMERICA

Incorporated under the laws of the State of New Jersey

FORREST F. DRYDEN, *President*

HOME OFFICE

NEWARK, NEW JERSEY

The
Management
of an
Infant's Diet

Malnutrition, Marasmus or Atrophy

Mellin's Food	}	Analysis:	Fat	49
4 level tablespoonfuls			Protein	2.28
Skimmed Milk			Carbohydrates	6.59
8 fluidounces			Salts . . . . .	.58
Water			Water	90.06
8 fluidounces				<u>100.00</u>

The principal carbohydrate in Mellin's Food is maltose, which seems to be particularly well adapted in the feeding of poorly nourished infants. Marked benefit may be expected by beginning with the above formula and gradually increasing the Mellin's Food until a gain in weight is observed. Relatively large amounts of Mellin's Food may be given, as maltose is immediately available nutrition. The limit of assimilation for maltose is much higher than other sugars, and the reason for increasing this energy-giving carbohydrate is the minimum amount of fat in the diet made necessary from the well-known inability of marasmic infants to digest enough fat to satisfy their nutritive needs.

MELLIN'S FOOD COMPANY

BOSTON, MASS.

SPECIAL SALE OF LABORATORY APPARATUS

WE are at work preparing a new catalog of Laboratory Apparatus used in Chemical, Biochemical and related Laboratories. The scope is being restricted to apparatus of certain standard manufacture and in rearranging our stock we find a large assortment of apparatus which, because of this policy, we will not list in our new catalog.

It becomes necessary that we dispose of this stock at once for the above reason; also to make room for large shipments now en route.

These supplies are up-to-date and standard and are offered at exceedingly low prices only because they are not of the type or manufacture that we shall list in the future.

These lists are now available for distribution. A post card brings a list to you.



The Will Corporation

GLASSWARE - CHEMICALS - LABORATORY APPARATUS
ROCHESTER, N. Y.

PRICE REDUCTION IN Standard Methods FOR THE ANALYSIS OF WATER AND SEWAGE

By printing in larger quantities and by substituting a flexible paper cover for the expensive cloth cover, we are able to cut the price 50 per cent on the 4th edition of Standard Methods.

The 4th edition (revised, 1920) will contain new matter upon the following subjects together with minor changes:

Phenol-Red Method of Hydrogen Ion Concentration
Carbohydrate Content of Media
The Use of Endo Medium
Synthetic Medium for the Methyl-Red Test

Standard Methods represent the consensus of opinion of American analysts concerning the best methods for the analysis of water and sewage, both chemical and bacteriological.

Price, with water-proof cloth cover. \$1.25, (as heretofore).

New price, heavy paper cover. \$0.60
(Postage is prepaid when cash is sent with order)

ORDER FROM

**American Public Health
Association**

169 Massachusetts Avenue
BOSTON 17, MASS.

TEAR OUT AND MAIL THIS COUPON

A. P. H. A.,
169 Mass. Ave.
Boston 17, Mass.

Send me Standard Methods for the Examination of Water and Sewage.

....Heavy paper cover, \$0.60
....Waterproof cloth.....\$1.25

I enclose \$
(Your check or postage will do)

Name.....

Address.....

City.....

BACTERIOLOGICAL STAINS

Dry Stains Chemicals
Staining Solutions
Culture Media Reagents
Embedding Material

For the purpose of diagnosing clinical cases where accuracy is of PARAMOUNT importance, laboratory technicians find our products indispensable on account of their **UNIFORM QUALITY, SOLUBILITY, PURITY** and **SHARP STAINING EFFECTS**.

Our complete price list will be mailed free on request



Illinois Research Laboratories
now located in new quarters at
127 No. Dearborn Street, Chicago, Ill.

Teach the Necessary Laws of Health by the VISUAL METHOD

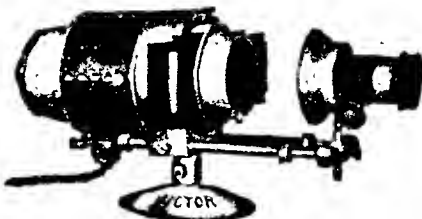
Progress will quickly be made toward the eradication of all diseases by visualizing the causes.

Proclaim warfare against the baffling germs of disease and

VISUALIZE Health Lectures

by use of the

VICTOR Portable Stereopticon



and VICTOR Patented Featherweight Slides

Special slide lecture set on Tuberculosis.
Slides made from any copy.

Catalogs Mailed Upon Request

Victor Animatograph Company
(Incorporated)

225 Victor Bldg. Davenport, Iowa

ROUT THE RAT AND PREVENT TYPHUS

"THE RAT MENACE"

A MOTION PICTURE showing the great harm done by the rat. Also shows practical means of exterminating this pest.

One of the best means of educating the public to a realization of the rat menace.

*Every Health Officer Should Have
This Picture*

Write for Bulletin

National Motion Pictures Company
Manufacturers and Distributors

Motion Picture Films, Slides and Machines
EDUCATIONAL FILMS A SPECIALTY
Indianapolis, Indiana

Live Lantern Slides for Health Lectures

A picture tells more at a glance than a hundred words of narrative, and its message is remembered far longer.

EDEXCO LANTERN SLIDES

will add force and entertainment to your Health Talks.

Our new list comprises over a thousand slides on School, Child, Baby and Mouth Hygiene; Flies, Mosquitoes, Milk and Tuberculosis.

Send a Postal Today

for our new list of slides—it is **FREE** for the asking.

**EDUCATIONAL
EXHIBITION**

331 Custom House St., Providence, R. I.

BORDEN'S MILK

is Safe

Thirty Inspectors and three veterinarians in the Borden Service live in the country where our milk is produced, and devote their entire time to guarding the Borden Supply at its source. These men make it their business to know that the milk that goes into a Borden bottle is

**Safe, Clean, Wholesome
and from Healthy Cows**

In addition, Borden's Milk is Pasteurized in accordance with the requirements of the Local Department of Health. You take no chances with Borden's Milk. It is safe when delivered to you.

BORDEN'S

Farm Products Company, Inc.

Phone, Franklin 3110

136 W. Lake Street

CHICAGO, ILLINOIS



Before You Drink Think

Boston Drinking Cup Co.

1000 Washington St.

BOSTON

MASS.



Globe-Wernicke Sectional Bookcases

are designed for the Office as well as the Home. Made in sizes for technical and reference books and hold them ready for instant use

The Globe-Wernicke Co.

91-93 Federal Street, Boston

Desks

Wood and Steel Filing Cabinets

Chairs

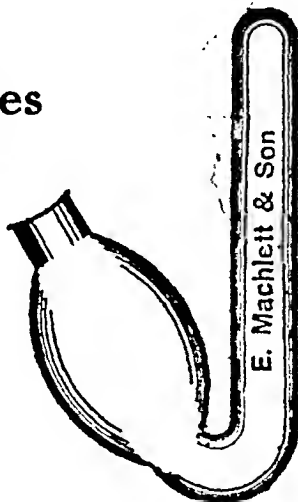
Fermentation Tubes

Improved Type

Straight Sided
Special Graduated

Pipettes

For Bacteriological
Milk Examinations



Chemical Apparatus

Special Apparatus

made from

Drawings

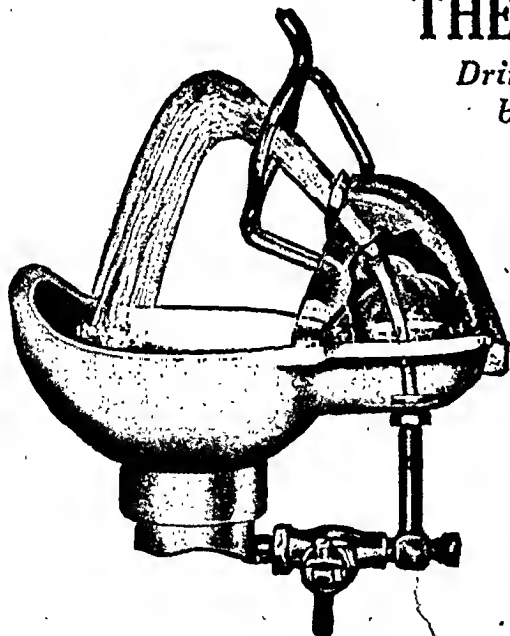
E. MACHLETT & SON

153 East 84th Street

NEW YORK CITY

THE PURO LIBERTY

*Drinking Fountain Cannot
become Contaminated!*



We court the fullest investigation of health department experts, bacteriologists, doctors and sanitary experts to prove to their own satisfaction that it is practically impossible to contaminate the water coming from the nozzle of the Puro. There is no way in which bacteria can come in contact with the stream in any ordinary usage of the fountain.

This Fountain can be furnished with wall bracket, pedestal or water cooler.

PURO SANITARY DRINKING FOUNTAIN CO.

HAYDENVILLE, MASS., U. S. A.

Vol. X

Sausch & Lomb H

ESTABLISHED 1848

BENDISER & SCHLESINGER

Analytical Laboratory

FOOD, MILK, WATER, CHEMICALS

Pathological and Bacteriological Work a Special Feature

Third Ave. and 10th St., New York City

William C. Hoad Arthur J. Decker W. R. Drury

HOAD AND DECKER

Consulting Civil, Hydraulic and Sanitary Engineers
Water Supply, Water Purification, Sewerage,
Drainage, Disposal of Sewage and Industrial
Wastes, Sanitary Analyses, Examinations, Ap-
praisals and Reports.

ANN ARBOR, MICHIGAN

KEERL & CONKLIN

Hydraulic and Sanitary Engineers

Water Supply and Purification, Flood Relief, Land and
Anopheles Drainage, Sewerage and Sewage Disposal,
Treatment of Industrial Wastes, Investigations of
Water Pollution, Sanitary Chemical Analyses.

625-27 M. B. A. Bldg., Mason City, Iowa

PEASE LABORATORIES, Inc.

Successors to

LEDERLE LABORATORIES

39 West 38th Street, New York City

HERBERT D. PEASE, M. D., Director

JOHN H. WRIGHT, M. S. PAUL FOETSCHKE, B. C.

Sanitary, Bacteriological and Chemical Investigations

WESTON & SAMPSO

Albert Spurr Weston G. A. Sampson.
Consulting Engineers for Water Supply, Water
Heating, Sewerage, Disposal of Sewage and
Municipal and Factory Wastes; Operation of
Purification Plants and Sanitary Analyses.

14 Beacon St., Boston, Mass.

NICHOLAS S. HILL, JR.

S. F. FERGUSON

HILL AND FERGUSON

Consulting Engineers

Water Supply Sewage Disposal Hydraulic Developments
Reports, Investigations, Valuations, Rates, De-
sign Construction, Operation, Management.
Chemical and Biological Laboratories.

112 East 19th Street

New York City

FULLER & McCLINTOCK

George W. Fuller Jas. R. McClintock Jesse K. Giesey
Elmer G. Manahan Jas. C. Harding Wellington Donaldson
Myron E. Fuller Daniel C. Hayne Harvey P. Jones
Consulting Hydraulic Engineers and Sanitary Experts
Water Supply, Sewerage, Refuse Disposal, Investigation
of Epidemics, Valuations, Supervision of Construction
and Operation.

170 Broadway, New York City

Valentine Bldg., Toledo, Ohio.

Produce Exchange Bldg., Kansas City, Mo.

THE BOSTON BIO-CHEMICAL LABORATORY

SAMUEL C. PRESCOTT, Director

Consulting Experts, Bacteriological and Chemical
Analyses; Water, Sewage, Milk Supply and
Dairy Inspection. Food Manufacture and Pres-
ervation. Disinfectants. Fermentation. Special
Investigations.

585 Boylston Street, Boston



CONSULTANT SERVICE

Campaign Management
Public Health, Hospital
Organization, Reorganization

ASSOCIATED SERVICE BUREAU

608 Renshaw Building
Pittsburgh, Pa.

N. J. STATE DEPARTMENT OF HEALTH—BUREAU OF CHILD HYGIENE

NURSES WANTED

MINIMUM SALARY.....\$1,200

Advancements in Salary Are Granted—

1. By Length of Service 2. Through Promotional Tests to higher Positions

Positions Vacant—

1. Child Hygiene Nurses.....\$1,200 2. District Supervisor of Midwives Dist-
3. Assistant Supr. of nurses.. 1,700 rict Supr. of nurses \$1,500

Nurses who are acceptable to the Department will be required to sign a one
year's contract.

Address Applications to **JULIUS LEVY, M.D., Bureau of Child Hygiene**
State House, Trenton, N. J.

When writing to Advertisers, say you saw it in the JOURNAL

Products.

When writing to Advertisers, say you saw it in the JOURNAL

**Fermentation
Tubes**

**Chemical
Apparatus**

Gonococcus Glycerol-Vaccine

more stable
more effective
less toxic

Advantages

1. Possesses 5 to 10 times more immunizing power than saline vaccine.
2. Will not deteriorate.
3. Free from autolytic products; contains gonococcal protein in unaltered form.
4. Does not produce toxic reactions even in large doses.

Results

1. Definite improvement noted in arthritis cases after 4th or 5th dose.
2. Gonococci rapidly disappear from urethral discharges.
3. Clinical results more favorable than with any other type of gonococcus vaccine.

The types of cases in which Gonococcus Glycerol-Vaccine has been used with encouraging results are chronic gonorrheal infections, including gonorrheal rheumatism, epididymitis, prostatitis and posterior urethritis.

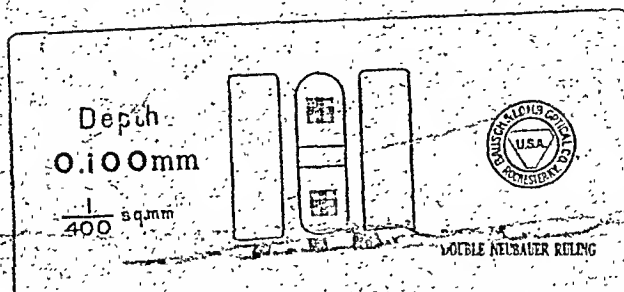
Further information on request

LEDERLE ANTITOXIN LABORATORIES

511 Fifth Avenue, New York City

Vol. 2

Bausch & Lomb Haemacytometer



No. 3518 Double Neubauer Ruling

Haemacytometer, complete in case, consisting of:

Counting Chamber (Buerker type) with Double Neubauer ruling of precise accuracy and plain lines.

Mixing Pipette, 1:100 for red corpuscles.

Mixing Pipette, 1:10 for white corpuscles.

Cover Glasses, plane, polished, 20x26 mm; one each 0.4 mm. and 0.6 mm.

Price, \$17.50

Every part of this Haemacytometer is subjected to exacting tests before leaving the factory, and is covered by our full guarantee as to accuracy, workmanship and material.

Bausch & Lomb Optical Co.

419 S. Paul St., Rochester, N. Y.

New York

Washington

Chicago

San Francisco

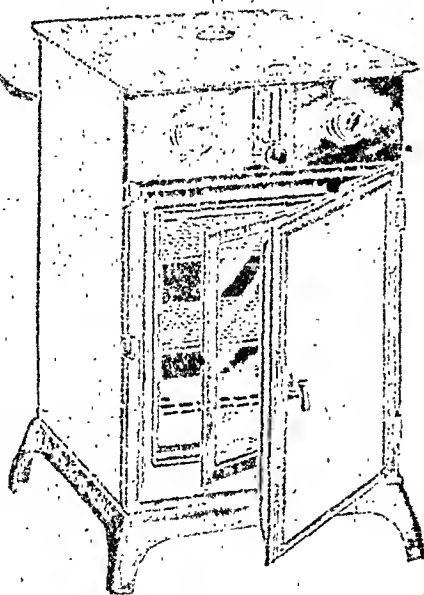
Leading American Makers of Microscopes, Photographic Lenses, Projection Apparatus (Balopticons), Ophthalmic Lenses and Instruments, Photo-micrographic Apparatus, Range-Finders and Gun Sights for Army and Navy, Searchlight Reflectors, Stereo-Prism Binoculars, Magnifiers and Other High Grade Optical Products.

Fermentation Electric Incubators and Sterilizers

Approved by the National Board of Fire Underwriters

Universally recognized as the most accurate and durable

The undermentioned advantages of the Freas' Electric Incubators and Sterilizers strongly recommend their use—where electricity is available—in preference to any others



1. The almost perfect insulation of the chamber, and the low current consumption to about one-half that required for other forms. This implies less heating up of the laboratory, less strain on the wiring, and in general longer and more satisfactory service.
2. The "all-metal" regulating device maintains constant temperature indefinitely to a fraction of a degree.
3. To set for the temperature desired requires but a few moments of time. This is accomplished by simply turning a milled-head screw, which moves the indicator up or down the graduated temperature scale.
4. There are no complicated devices for etc. The rugged parts is such that, with ordinary care, no parts are liable to get out of order.
5. Water is not required, nor employed, to maintain an even temperature throughout the chamber, thereby eliminating leakage, a disadvantage so common with copper incubators. The specifications explain the reasons for this advantage.
6. No auxiliary devices are needed. To operate, it is only necessary to screw the plug into a lamp socket, and turn on the current. They will operate on either direct or alternating current. *When ordering specify the voltage.*

WRITE FOR DESCRIPTIVE BOOKLET

EIMER & AMEND

FOUNDED 1871

Headquarters for Bacteriological, Educational and Industrial Laboratory Supplies

NEW YORK CITY
205-211 Third Avenue



PITTSBURGH, PA.
2011 Jenkins-Arcade Bldg.

